Overview of the SMS (v11.0)

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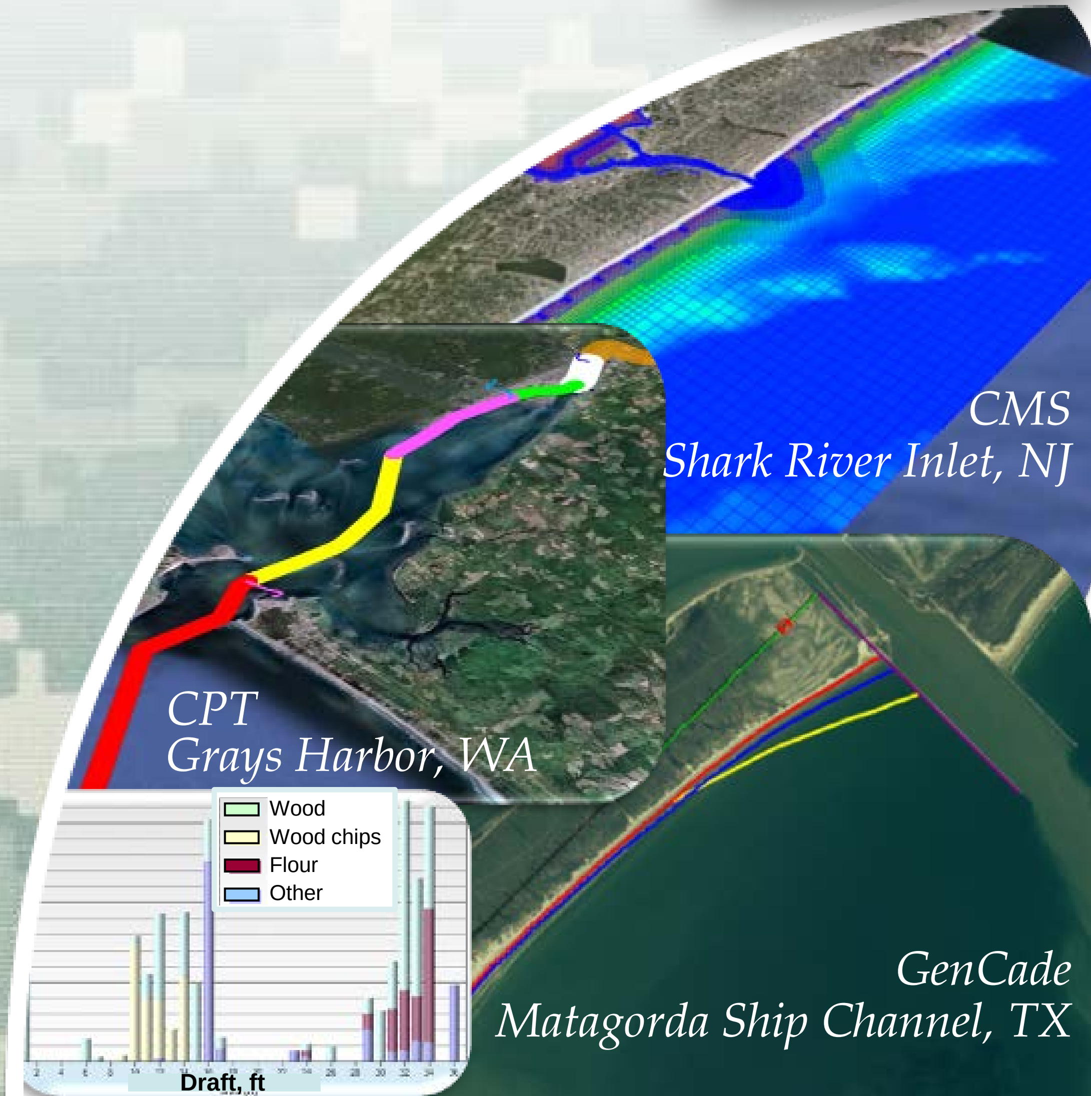
March 6, 2012


CMS
Shark River Inlet, NJ

CPT
Grays Harbor, WA

GenCade
Matagorda Ship Channel, TX

🟩 Wood
🟨 Wood chips
🟥 Flour
🟦 Other
Draft, ft

US Army Corps of Engineers
BUILDING STRONG®

Report Documentation Page	*Form Approved* *OMB No. 0704-0188*

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14. ABSTRACT

15. SUBJECT TERMS

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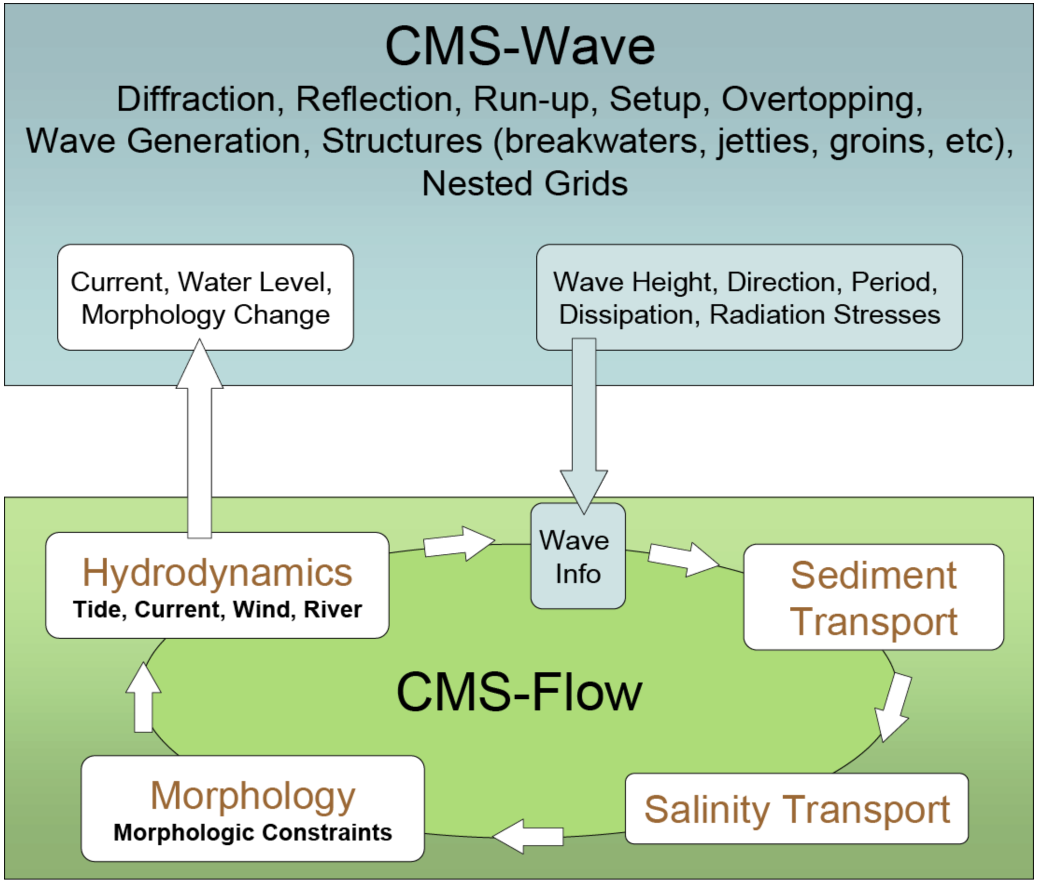
Overview of Presentation

Introduction to the Surface-water Modeling System (SMS v.11.0)

- What is it?
- Tools, Modules, Data Tree, Images, etc.
- CMS Models interface

CMS Overview


CMS-Wave
Diffraction, Reflection, Run-up, Setup, Overtopping,
Wave Generation, Structures (breakwaters, jetties, groins, etc),
Nested Grids
Current, Water Level, Morphology Change
Wave Height, Direction, Period, Dissipation, Radiation Stresses
Hydrodynamics
Tide, Current, Wind, River
Wave Info
Sediment Transport
CMS-Flow
Morphology
Morphologic Constraints
Salinity Transport

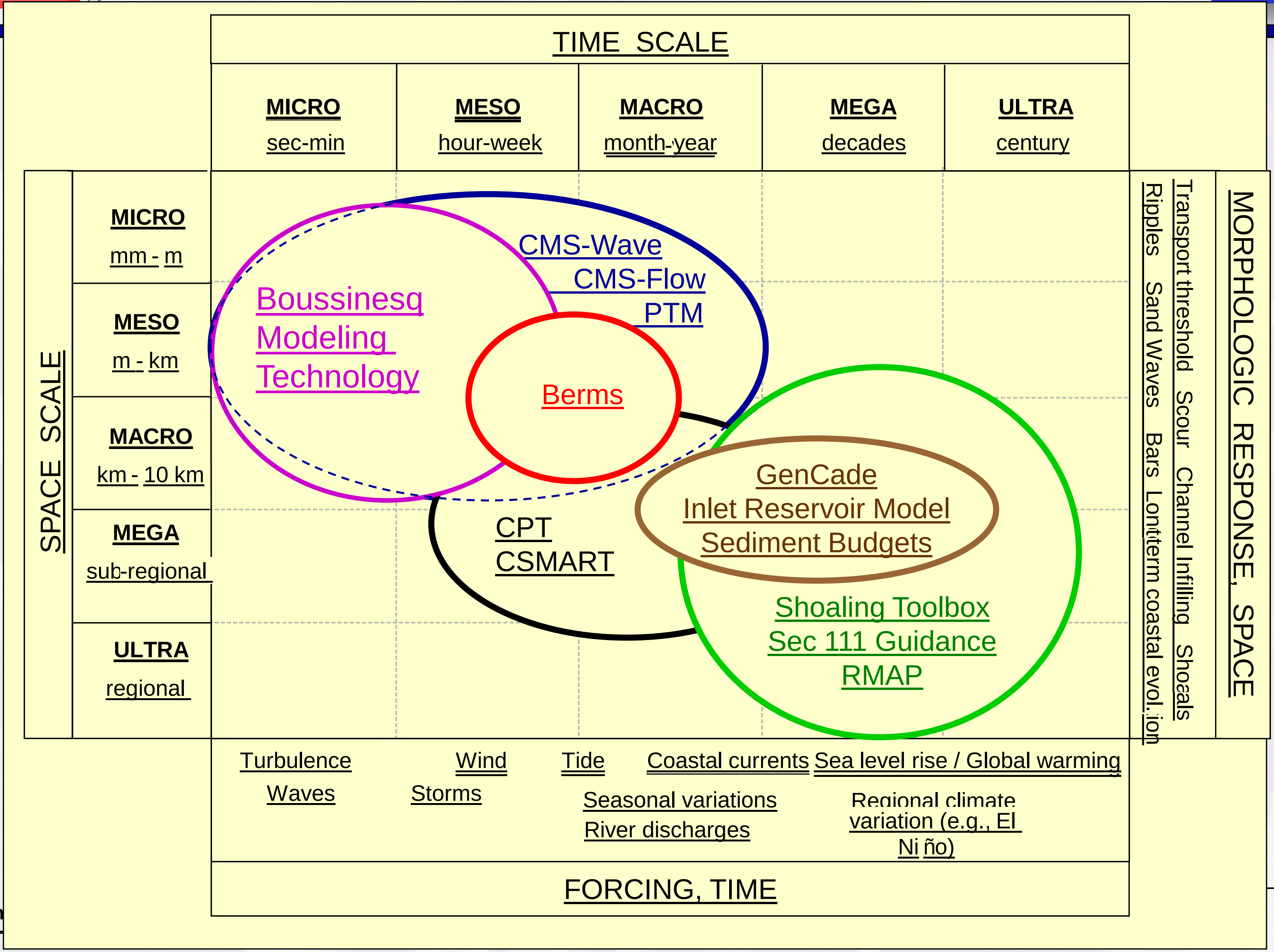
Since 1997…

- 38 workshops
- Districts can independently run the CMS!

Advantages…

- Robust
- Physics-based
- Integrated SYSTEM
- In SMS
- User-friendly

Scales of Coverage



TIME SCALE

MICRO
sec-min

MESO
hour-week

MACRO
month-year

MEGA
decades

ULTRA
century

SPACE SCALE

MICRO
mm - m

MESO
m - km

MACRO
km - 10 km

MEGA
sub-regional

ULTRA
regional

Boussinesq
Modeling
Technology

CMS-Wave
CMS-Flow
PTM

Berms

CPT
CSMART

GenCade
Inlet Reservoir Model
Sediment Budgets

Shoaling Toolbox
Sec 111 Guidance
RMAP

Turbulence
Waves

Wind
Storms

Tide
Seasonal variations
River discharges

Coastal currents
Sea level rise / Global warming
Regional climate variation (e.g., El Niño)

FORCING, TIME

MORPHOLOGIC RESPONSE, SPACE

Transport threshold Scour Channel Infilling Shoals

Ripples Sand Waves Bars Lonterm coastal evol.ion

What is the SMS?

- **A Pre-Processor**
  - Organize and create input files for Corps of Engineers' Numerical Models
- **A Post-Processor (visualize results)**
  - Create plots
  - Create film loops
  - Data calculator
  - Dataset creation
- **Connect with outside tools**
  - Import/export CAD data
  - Import/export GIS data
  - Import/export tabular ASCII data
  - Import/export image data

Overview of SMS interface

The SMS interface is modular. Separate modules pertain to each data type. As the user switches from one module to another, the menus and tools change. Inside the modules, the user associates a numerical model with a mesh or grid. When that grid is active, the tools and menus for the associated model are also enabled.

The SMS screen includes several toolbars, edit fields, and menus. Some of these change as the user switches modules or numerical models. The principal components include:

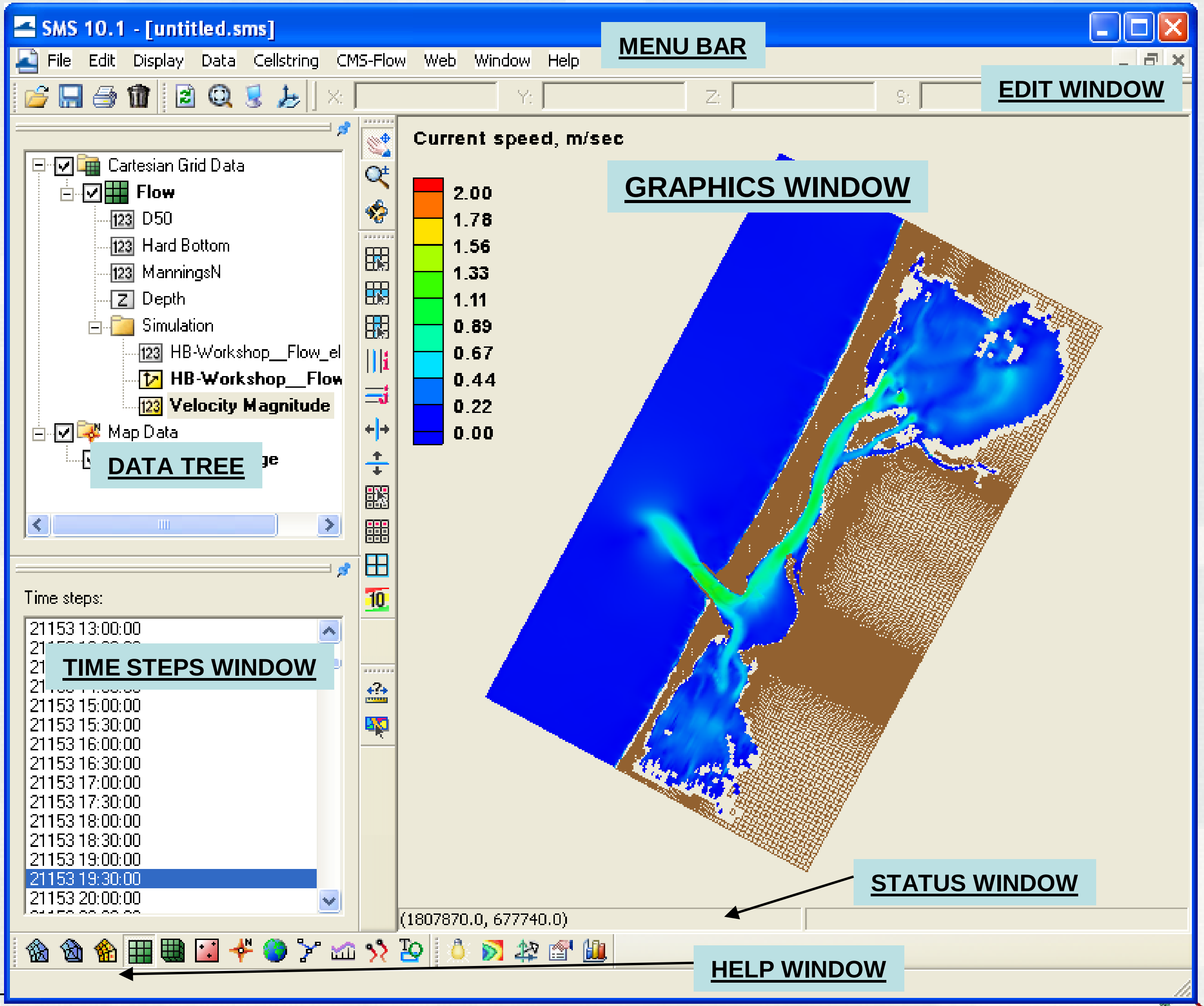
- Menu Bar - Menu to issue commands. These change as the module and model change.
- Edit Window - Fields directly below the menu bar showing the coordinates and function values for selected entities.
- Graphics Window - Display panel to show the data being manipulated.
- Project Explorer (Data Tree) - Tree representation of data currently referenced through SMS.
- Time Step Window – Appears if transient data are available.
- Toolbars - Several toolbars can be displayed. For more information on each toolbar, see the Toolbars article.
- Help or Status Window

The toolbars, project explorer, time steps window, and edit window are dockable windows. Dockable windows may be positioned by the user.

SMS Modeling Suite

The Data Tree (also referred to as the “Project Explorer") is a dockable window that appears by default on the left side of the SMS screen.

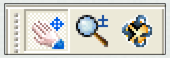
This window displays a hierarchical tree structure representing all data currently being managed in an SMS simulation.


SMS 10.1 - [untitled.sms]
MENU BAR
File
Edit
Display
Data
Cellstring
CMS-Flow
Web
Window
Help
EDIT WINDOW
X:
Y:
Z:
S:
Cartesian Grid Data
Flow
D50
Hard Bottom
ManningsN
Depth
Simulation
HB-Workshop__Flow_el
HB-Workshop__Flow
Velocity Magnitude
Map Data
DATA TREE
Time steps:
21153 13:00:00
TIME STEPS WINDOW
21153 15:00:00
21153 15:30:00
21153 16:00:00
21153 16:30:00
21153 17:00:00
21153 17:30:00
21153 18:00:00
21153 18:30:00
21153 19:00:00
21153 19:30:00
21153 20:00:00
Current speed, m/sec
2.00
1.78
1.56
1.33
1.11
0.89
0.67
0.44
0.22
0.00
GRAPHICS WINDOW
STATUS WINDOW
(1807870.0, 677740.0)
HELP WINDOW

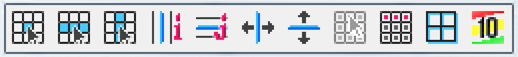
Toolbars

Toolbars

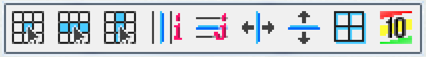
- Static Toolbar



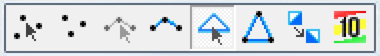
- Dynamic Toolbar
  - Grid
    - CMS-Flow



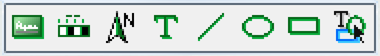
    - CMS-Wave



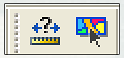
  - Scatter



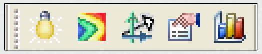
  - Annotation



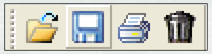
- Data Toolbar



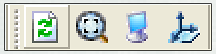
- Optional Toolbars
  - Macro



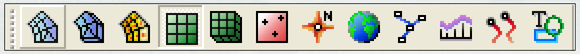
  - File

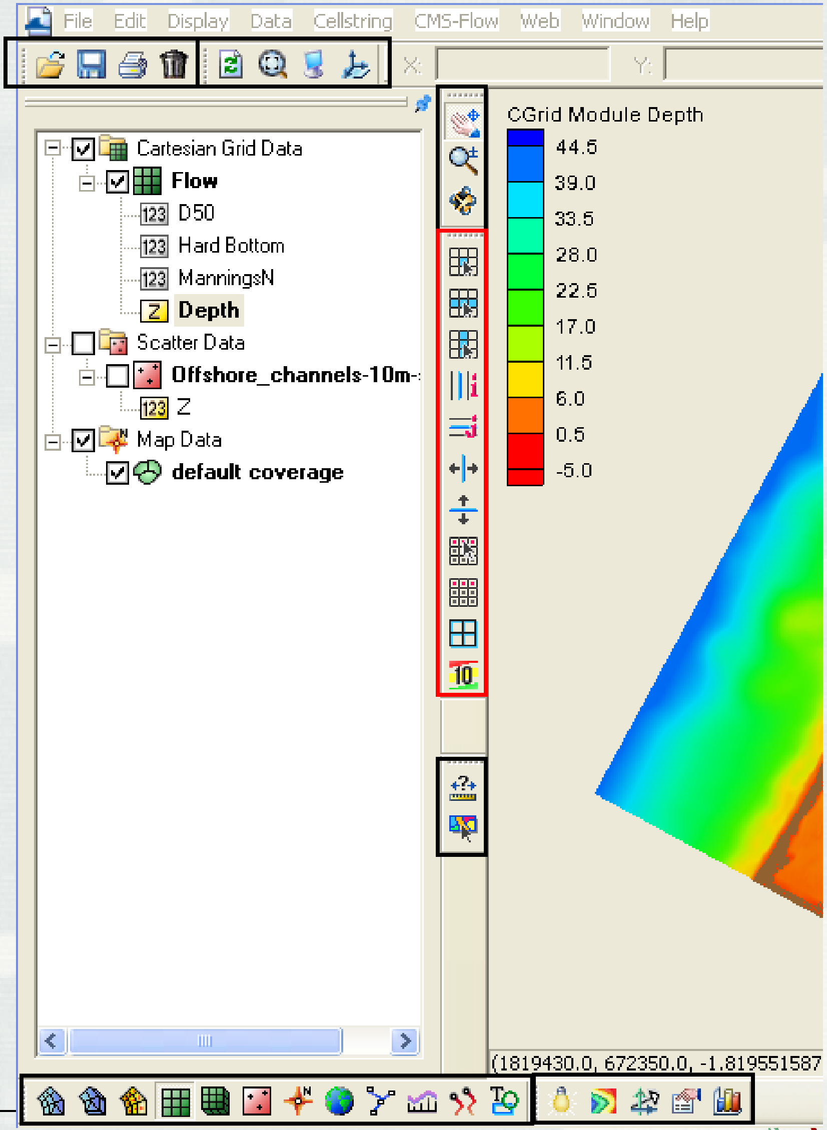


  - Display



- Module Toolbar





File
Edit
Display
Data
Cellstring
CMS-Flow
Web
Window
Help
X:
Y:
Cartesian Grid Data
Flow
D50
Hard Bottom
ManningsN
Depth
Scatter Data
Offshore_channels-10m-
Z
Map Data
default coverage
CGrid Module Depth
44.5
39.0
33.5
28.0
22.5
17.0
11.5
6.0
0.5
-5.0
(1819430.0, 672350.0, -1.819551587

Dynamic Toolbar

Cartesian Grid tools

- Select Cell, Row, and Column
- Split Column and Row
- Move Column and Row Edges
- Select and Create Cellstrings
- Create Grid Frame
- Apply Contour Labels

Scatter Data tools

- Select and Create Point
- Select and Create Breakline
- Select and Create Triangle
- Flip Triangle Edge

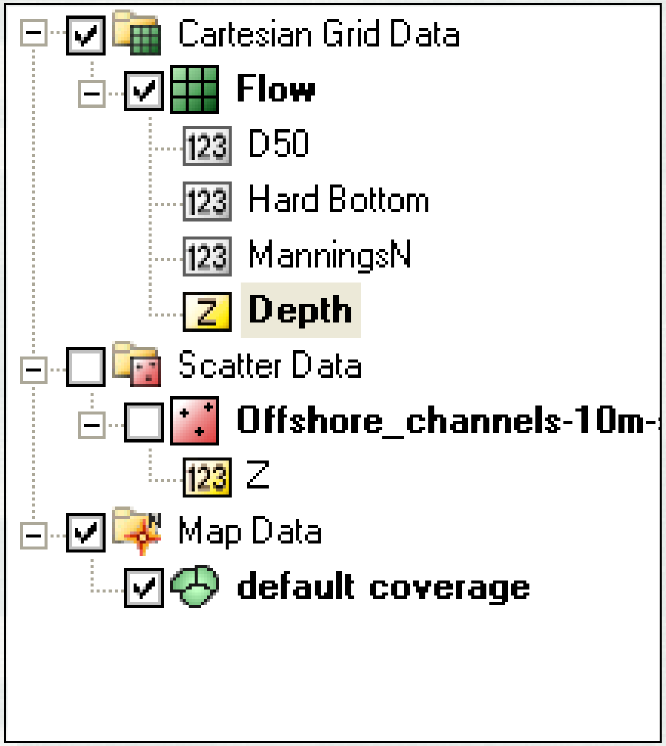
Map Data Tools

- Select Feature Node
- Create Feature Node
- Select Vertex
- Add Vertex
- Select Feature Arc
- Create Feature Arc
- Select Feature Polygon
- Create 2-d Grid Frame
- Select 2-d Grid Frame

Selection tools usually have an arrow that points to the specific type of element.

Creation tools are identical to selection tools, only they do not have the arrow.

Data Tree Components


Cartesian Grid Data
Flow
D50
Hard Bottom
ManningsN
Depth
Scatter Data
Offshore_channels-10m-
Z
Map Data
default coverage

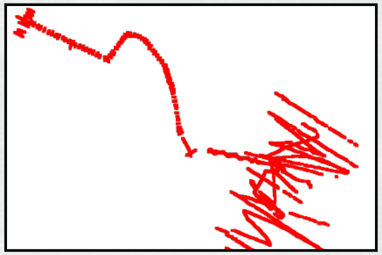
- The Data Tree makes selection of loaded datasets easy. Simply click on a dataset to make it active, and the graphics window updates accordingly.
- There are several “right-click” options available depending on the type of dataset activated, and within which module it is located. A few of these are:
  - Basic Dataset Information
  - Dataset-specific contour options
  - Export to file
  - Metadata Information
- The display of each asset in the Data Tree can be turned off by unchecking the display box next to the dataset name.

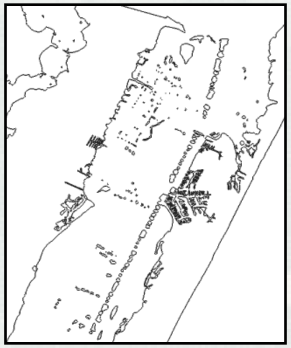
SMS – a complete modeling interface

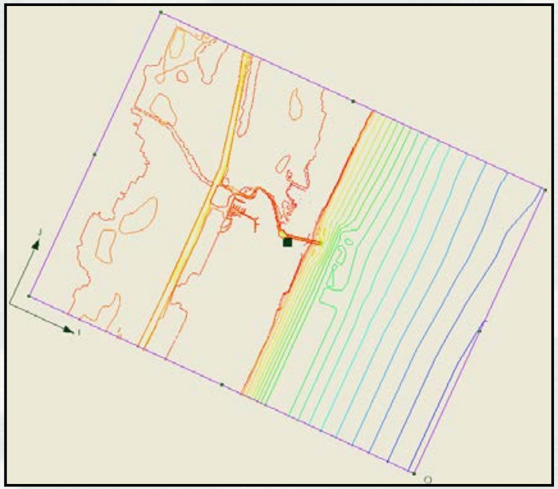
Build a CMS model from start to finish – all within SMS

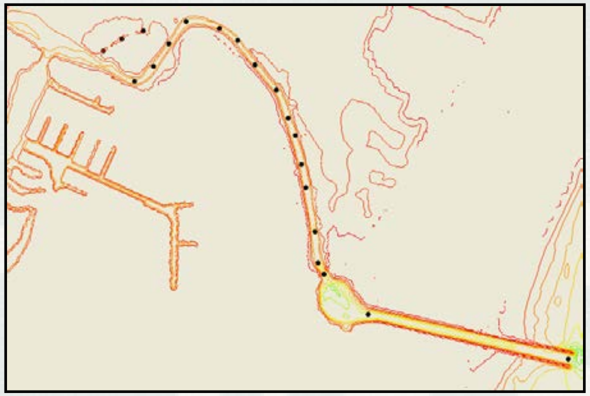
Import Background Data

- Topographic & bathymetric data – numerous formats supported
- Images – maps & aerial photos
- CAD, GIS & spreadsheet data







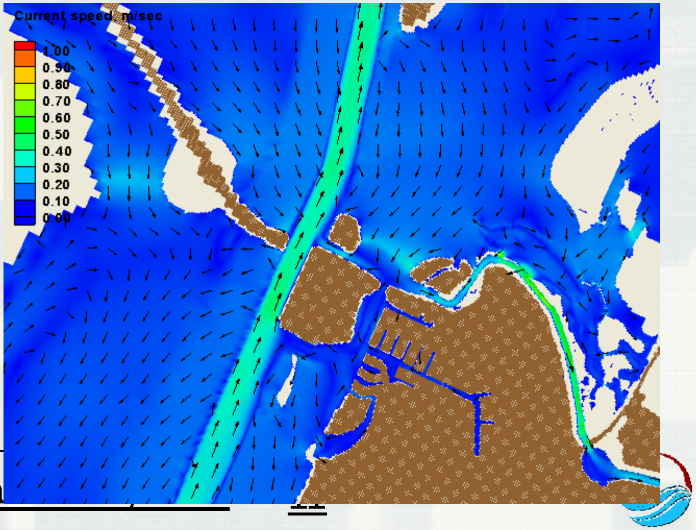


Create Conceptual Model

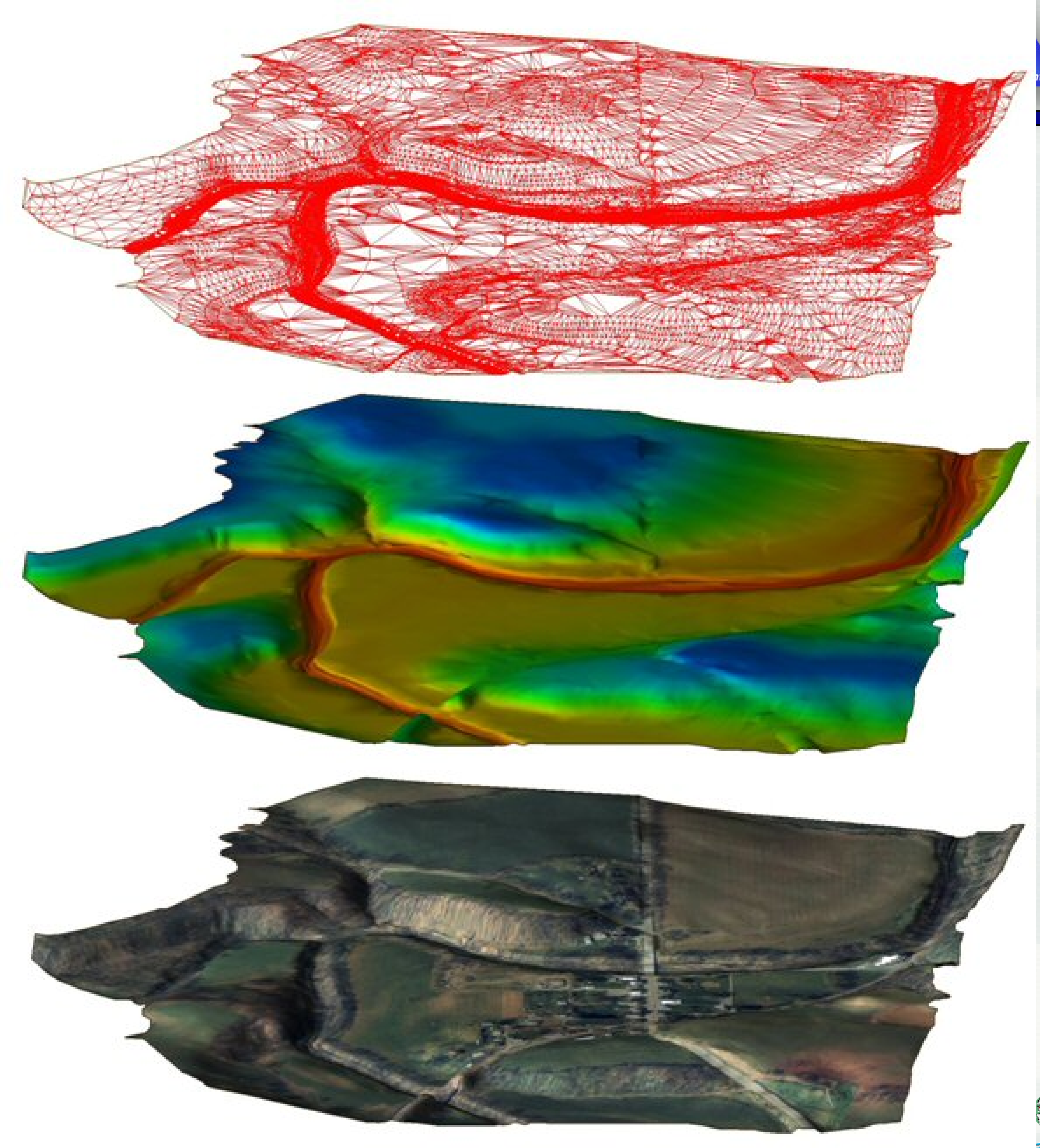
- Delineate CMS model domain
- Define areas of finer resolution

Generate & Run CMS Models

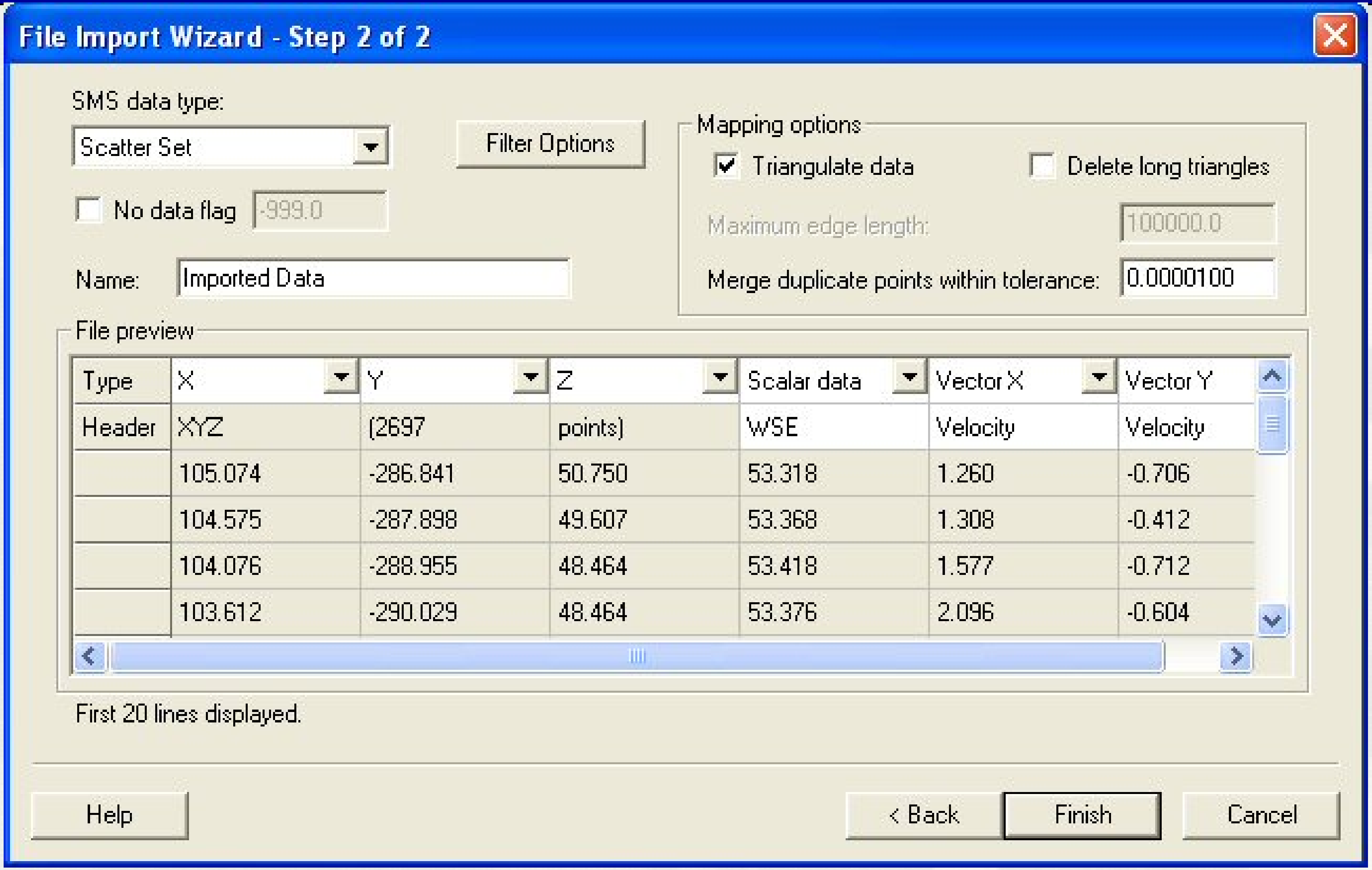
- Automatically generate grid
- Interpolate depths from background data
- Utilize built-in interfaces to define model-specific parameters and boundary conditions
- Run model and visualize results



SMS –
Data Processing



Import Wizard



File Import Wizard - Step 2 of 2

SMS data type: Scatter Set

☐ No data flag -999.0

Name: Imported Data

Mapping options

☑ Triangulate data

☐ Delete long triangles

Maximum edge length: 100000.0

Merge duplicate points within tolerance: 0.0000100

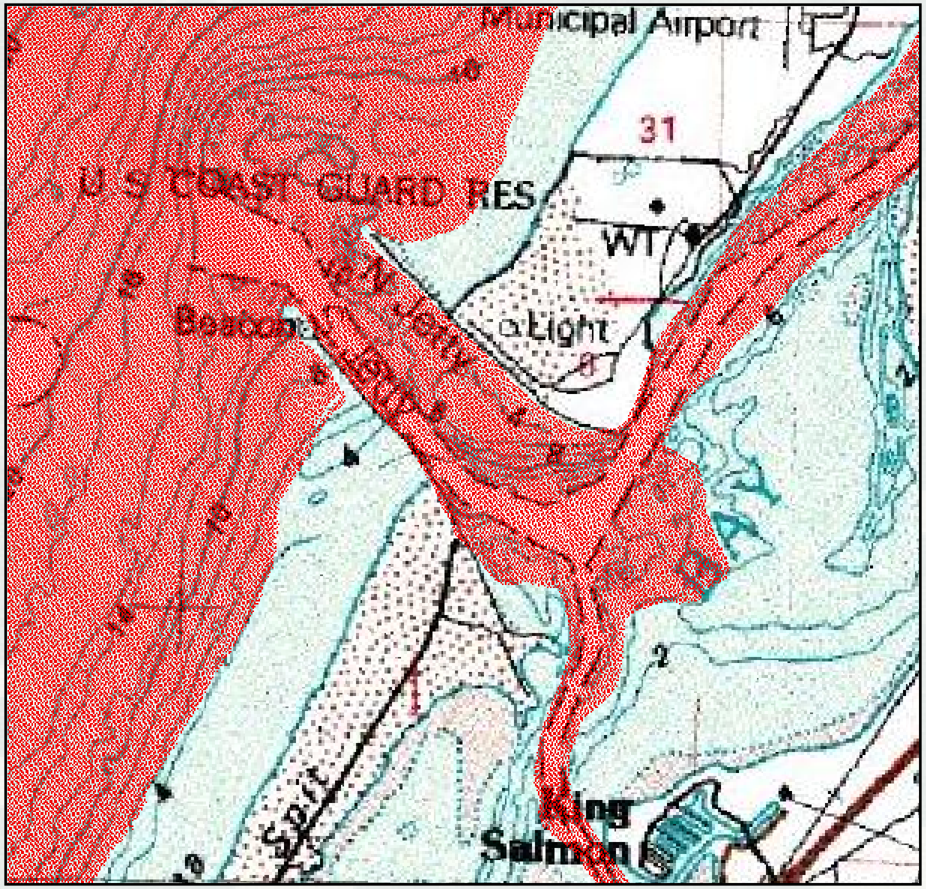
File preview

Type	X	Y	Z	Scalar data	Vector X	Vector Y
Header	XYZ	(2697	points)	WSE	Velocity	Velocity
	105.074	-286.841	50.750	53.318	1.260	-0.706
	104.575	-287.898	49.607	53.368	1.308	-0.412
	104.076	-288.955	48.464	53.418	1.577	-0.712
	103.612	-290.029	48.464	53.376	2.096	-0.604

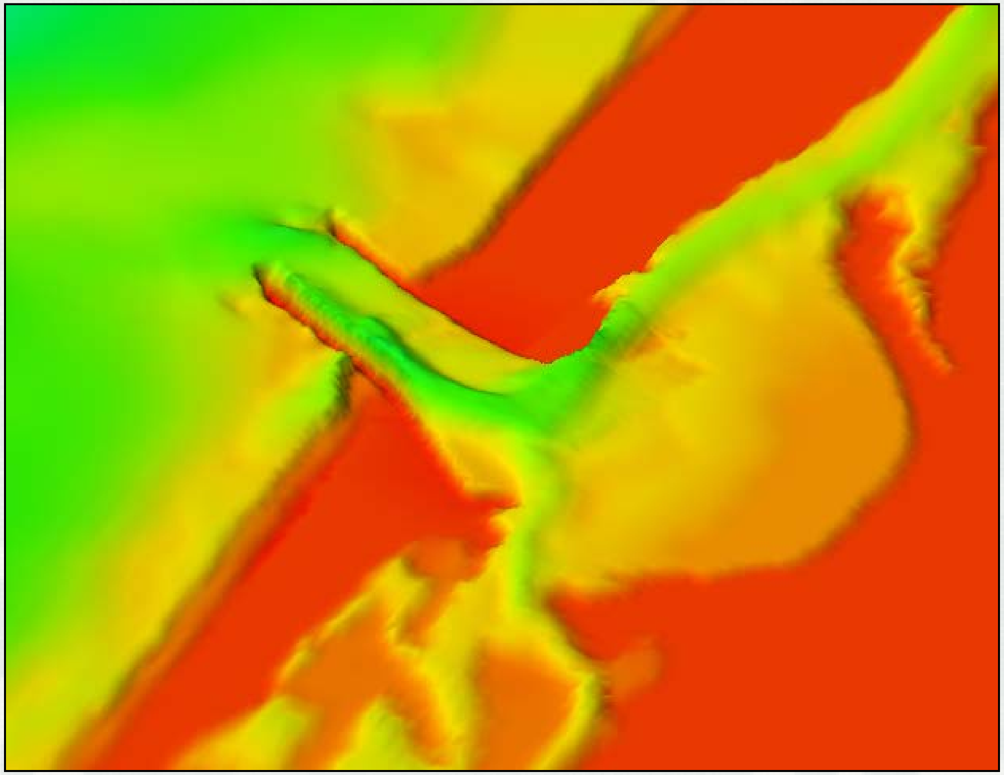
First 20 lines displayed.

Scattered Data (TINs)

- **Stores spatially varied data**
  - Bathymetric data most common
  - Interpolates from one grid/mesh to another
  - Allows combination of data sources
  - Facilitates data thinning or filtering


Municipal Airport
31
U S COAST GUARD RES
WT
Light
Beacon
Spit
King Salmon

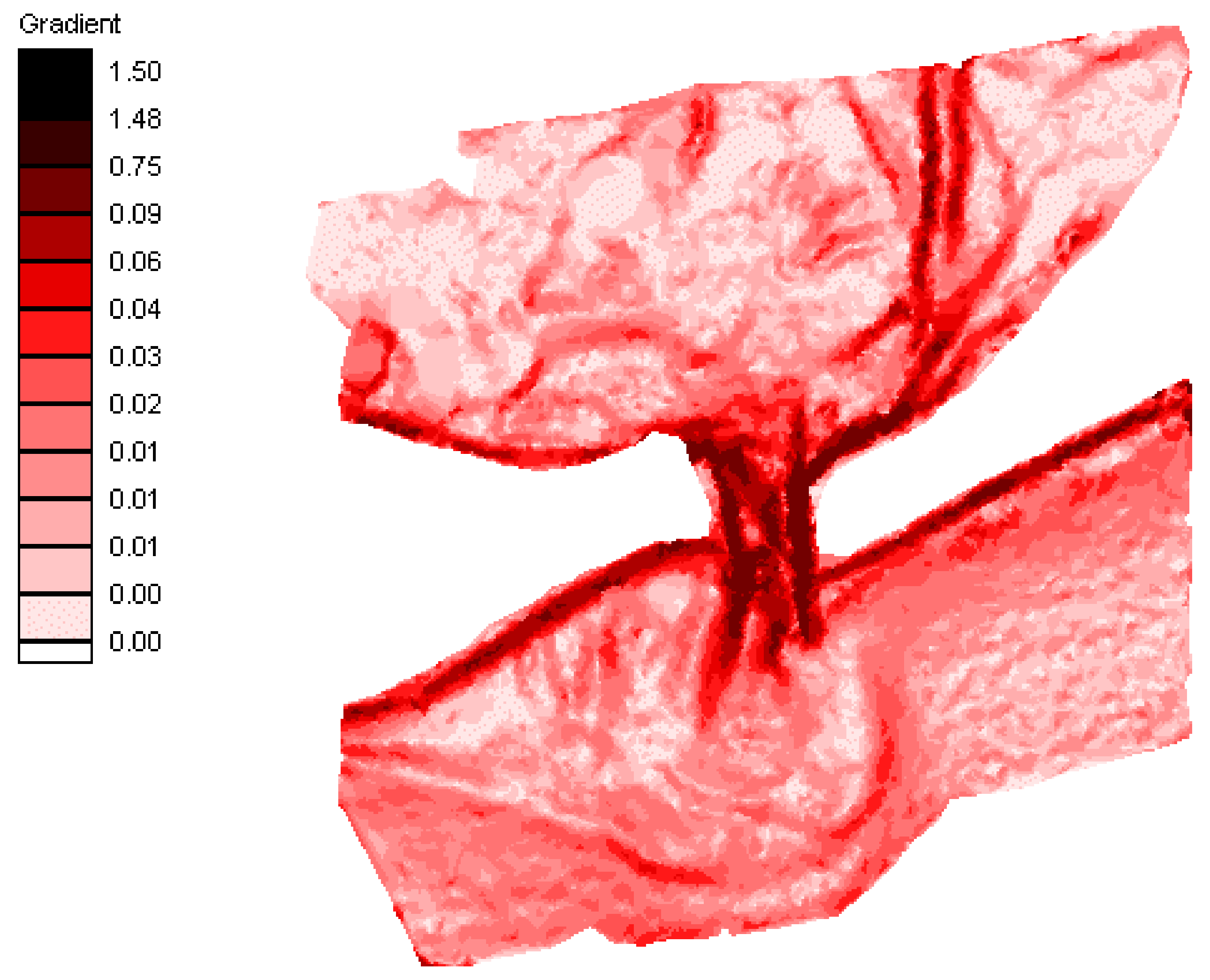
Visualization of Scattered Data



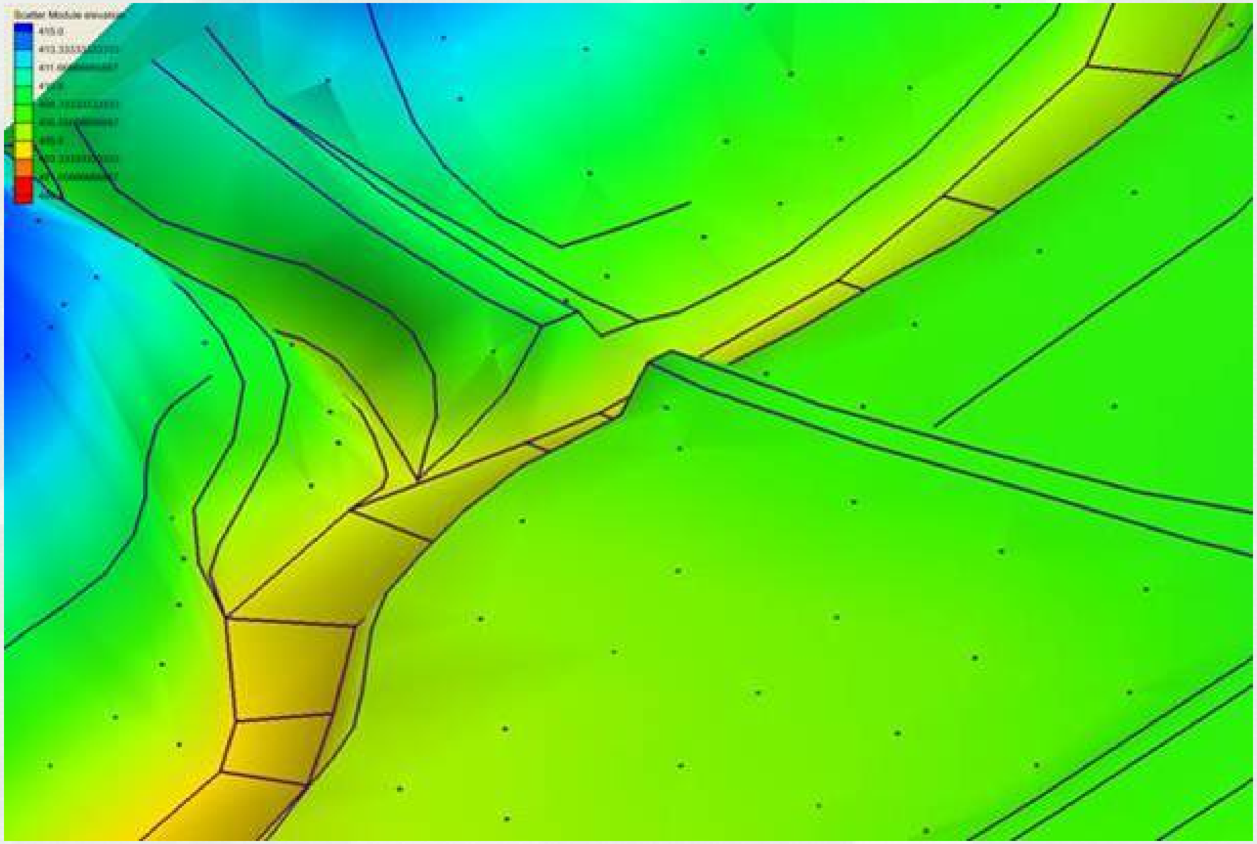
Humboldt Bay, CA
Oblique view
Z-magnification 5x

- **Options**
  - Magnify in Z direction
  - Oblique or plan views
  - Fill with contours options
  - Shading

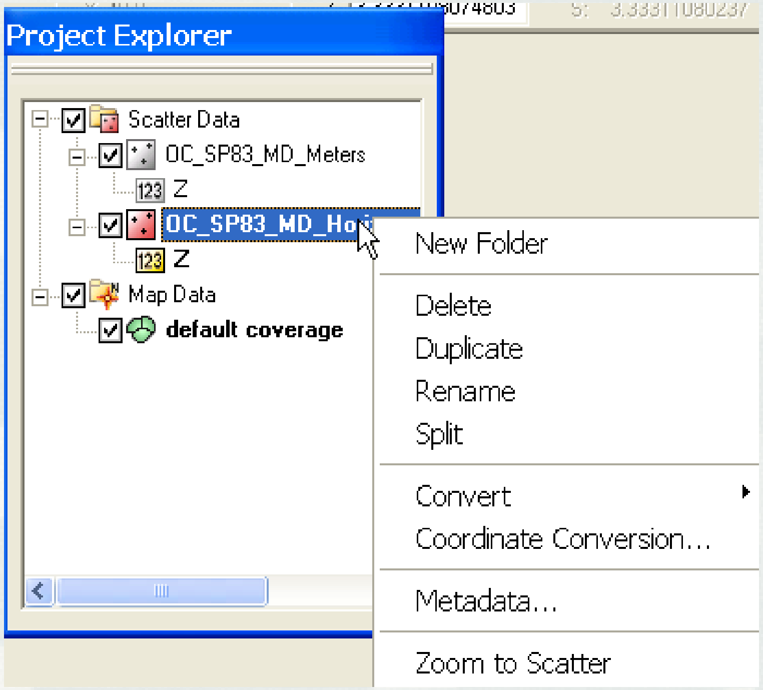
Lidar Survey


Gradient
1.50
1.48
0.75
0.09
0.06
0.04
0.03
0.02
0.01
0.01
0.01
0.00
0.00

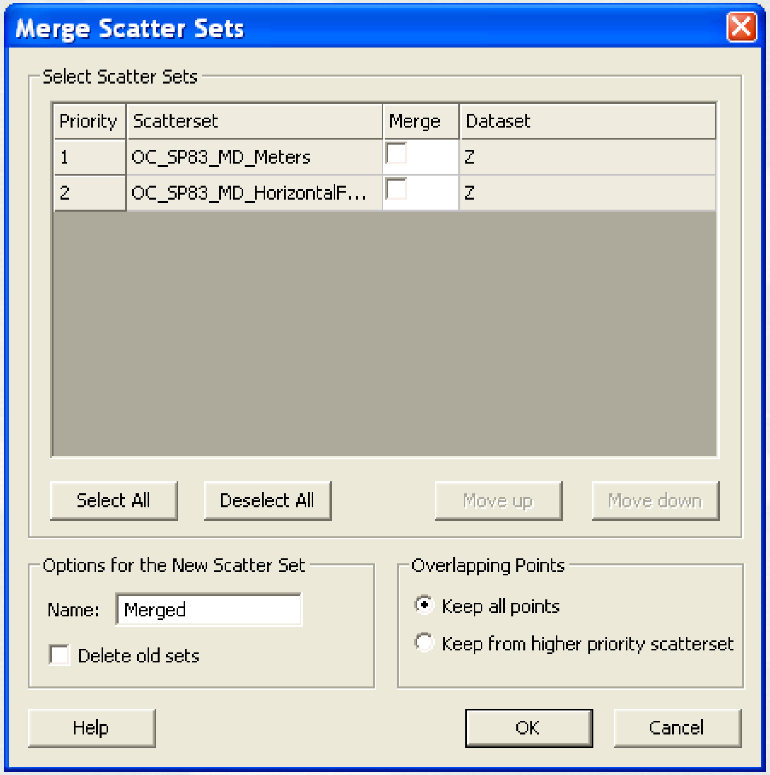
Breaklines



Operating With Scatter Sets


Project Explorer
Scatter Data
OC_SP83_MD_Meters
Z
OC_SP83_MD_Ho
Z
Map Data
default coverage
New Folder
Delete
Duplicate
Rename
Split
Convert
Coordinate Conversion...
Metadata...
Zoom to Scatter

- **Merge**


Merge Scatter Sets

Select Scatter Sets

Priority	Scatterset	Merge	Dataset
1	OC_SP83_MD_Meters	☐	Z
2	OC_SP83_MD_HorizontalF...	☐	Z

Select All
Deselect All
Move up
Move down

Options for the New Scatter Set

Name: Merged

☐ Delete old sets

Overlapping Points

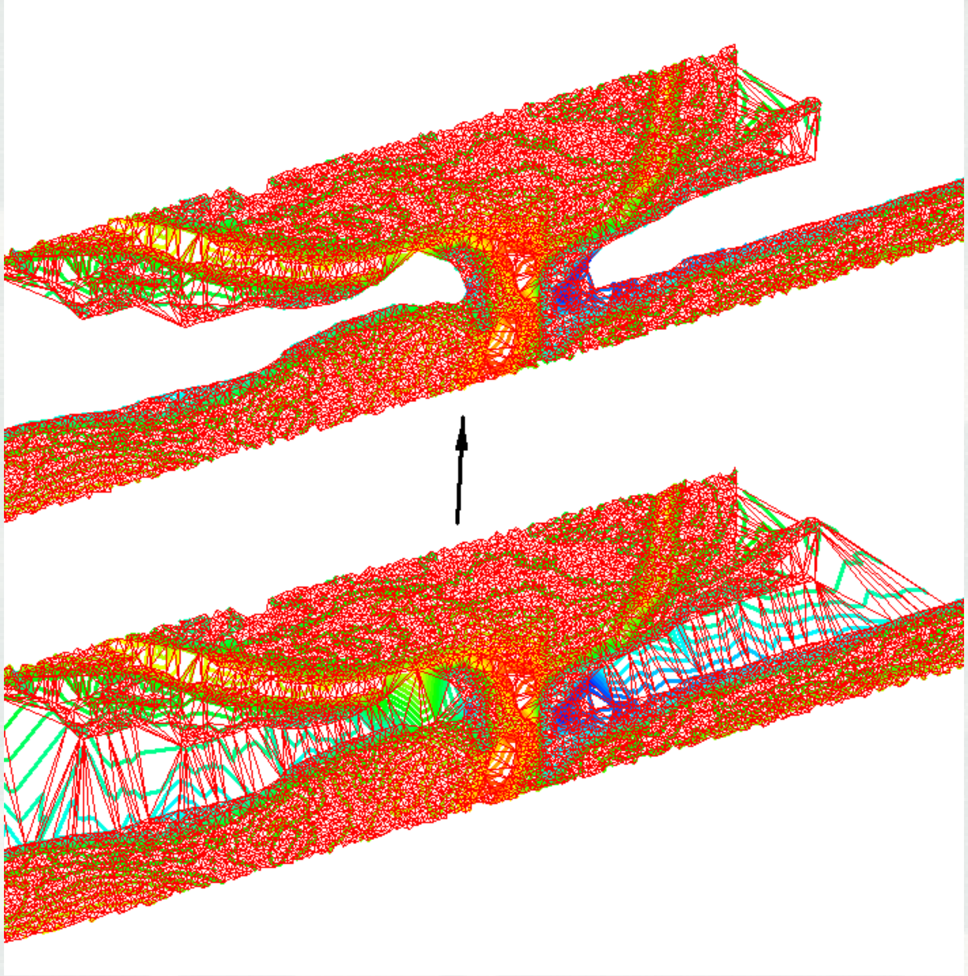
● Keep all points

○ Keep from higher priority scatterset

Help
OK
Cancel

Points and Triangles

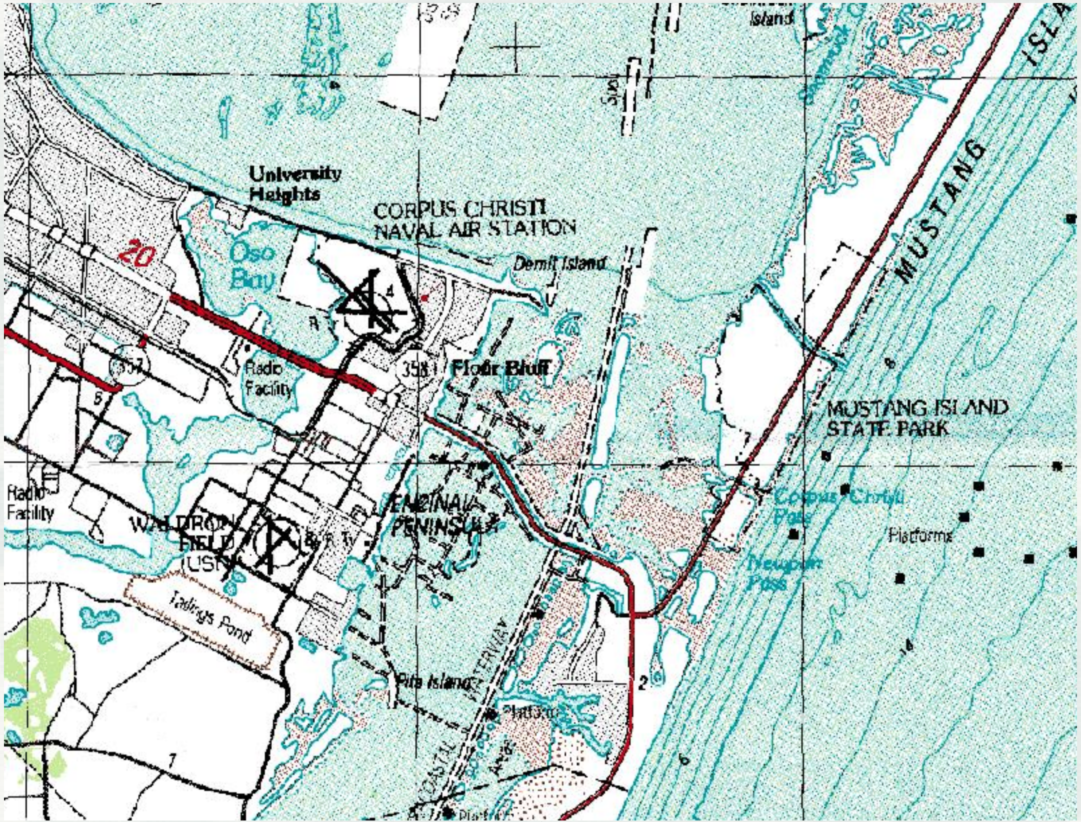
- **User can delete points or triangles to change extents of a set.**
- **User can swap edges to alter shape of surface**
  - **Used in linear interpolation**

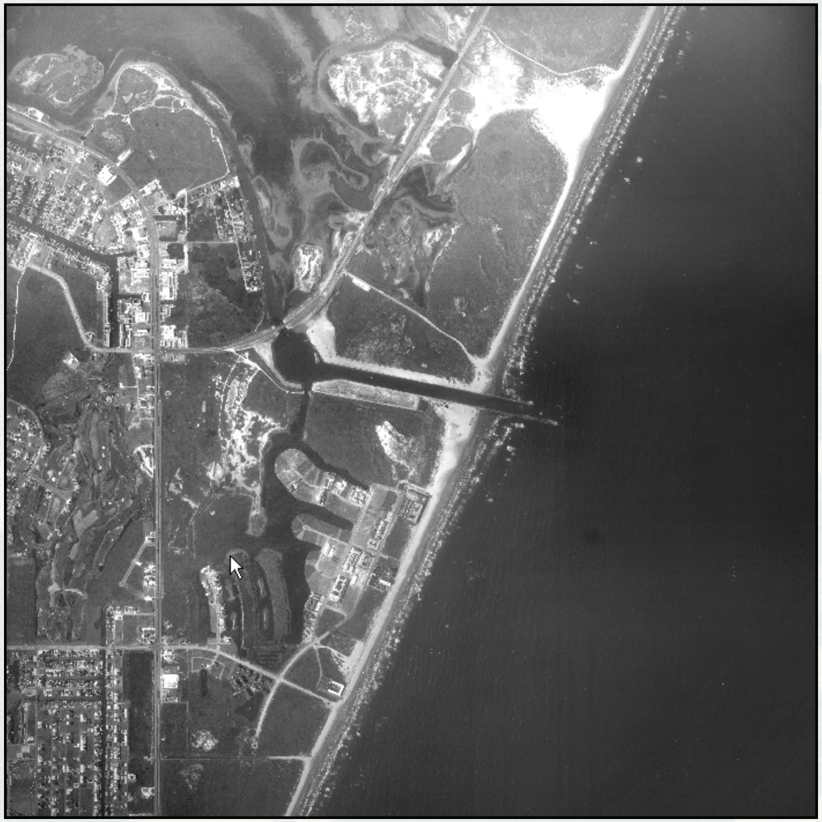


Images

Topo Maps

Aerial Photos

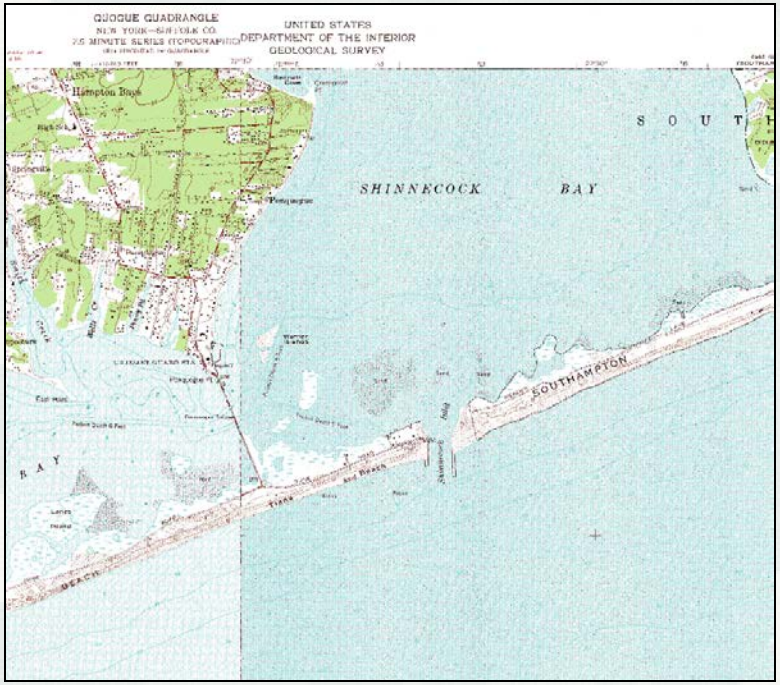

University Heights
CORPUS CHRISTI NAVAL AIR STATION
20
Oso Bay
Demit Island
Radio Facility
Flour Bluff
MUSTANG
MUSTANG ISLAND STATE PARK
Corpus Christi Pass
Platforms
Newport Pass
ENCINAL PENINSULA
Radio Facility
WALDRON FIELD
Tailings Pond
Pita Island
Platform
Island

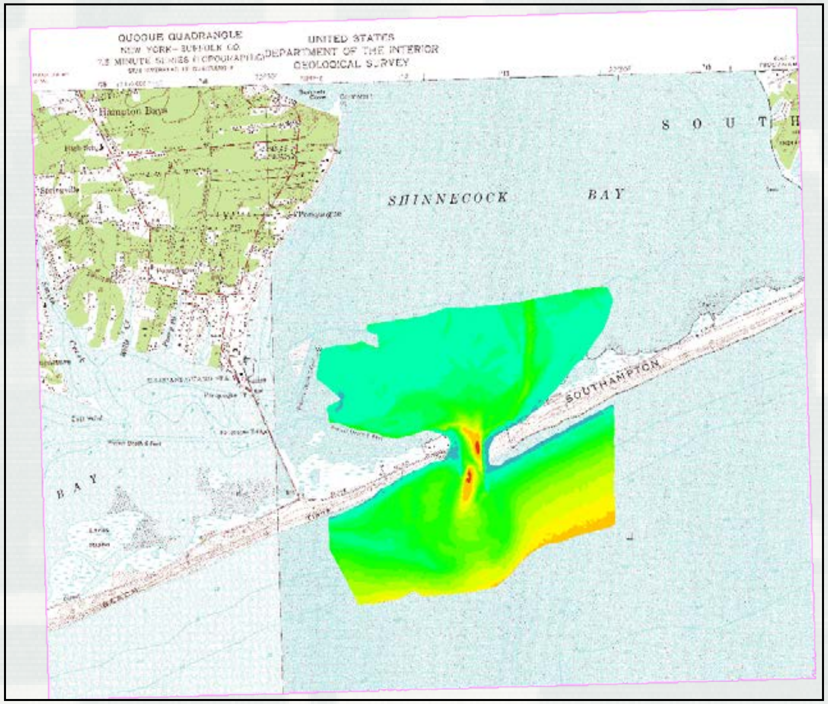


http://terraserver.microsoft.com

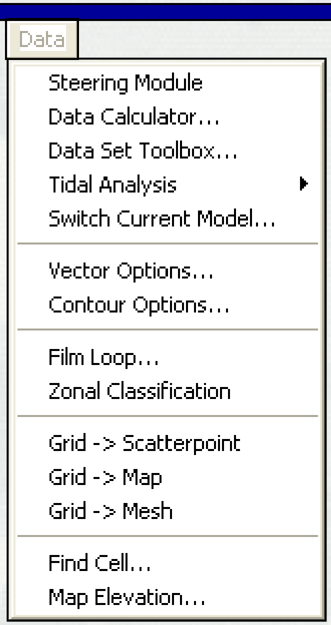
Image Data

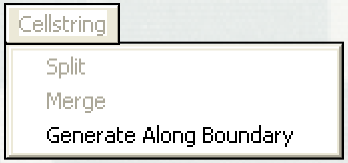
Overlay data over images

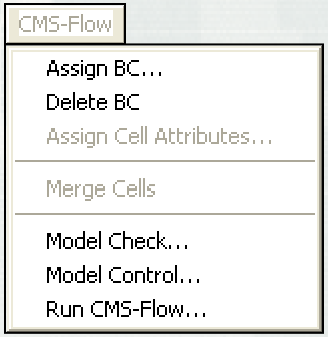

QUOGUE QUADRANGLE
NEW YORK—SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Hampton Bays
SHINNECOCK
BAY
S O U T H
SOUTHAMPTON
BAY
BEACH


QUOGUE QUADRANGLE
NEW YORK—SUFFOLK CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Hampton Bays
SHINNECOCK
BAY
S O U T H
SOUTHAMPTON
BAY
BEACH

CMS-Flow Interface: Pull-down Menus


Data
Steering Module
Data Calculator...
Data Set Toolbox...
Tidal Analysis
Switch Current Model...
Vector Options...
Contour Options...
Film Loop...
Zonal Classification
Grid -> Scatterpoint
Grid -> Map
Grid -> Mesh
Find Cell...
Map Elevation...


Cellstring
Split
Merge
Generate Along Boundary


CMS-Flow
Assign BC...
Delete BC
Assign Cell Attributes...
Merge Cells
Model Check...
Model Control...
Run CMS-Flow...

The Data pull-down menu contains many items – here are a few:

- Steering Module – Starts/controls interaction between Flow and Wave
- Data Calculator – Dataset-based functions
- Dataset Toolbox – Dataset-based operations (includes Calculator)
- Vector/Contour Options – Change appearance of data within the Graphics Window
- Film Loop – Generate animations based on loaded data/solutions
- Grid -> Scatterpoint – Convert CMS-Flow grid to Scatterpoint dataset (TIN)

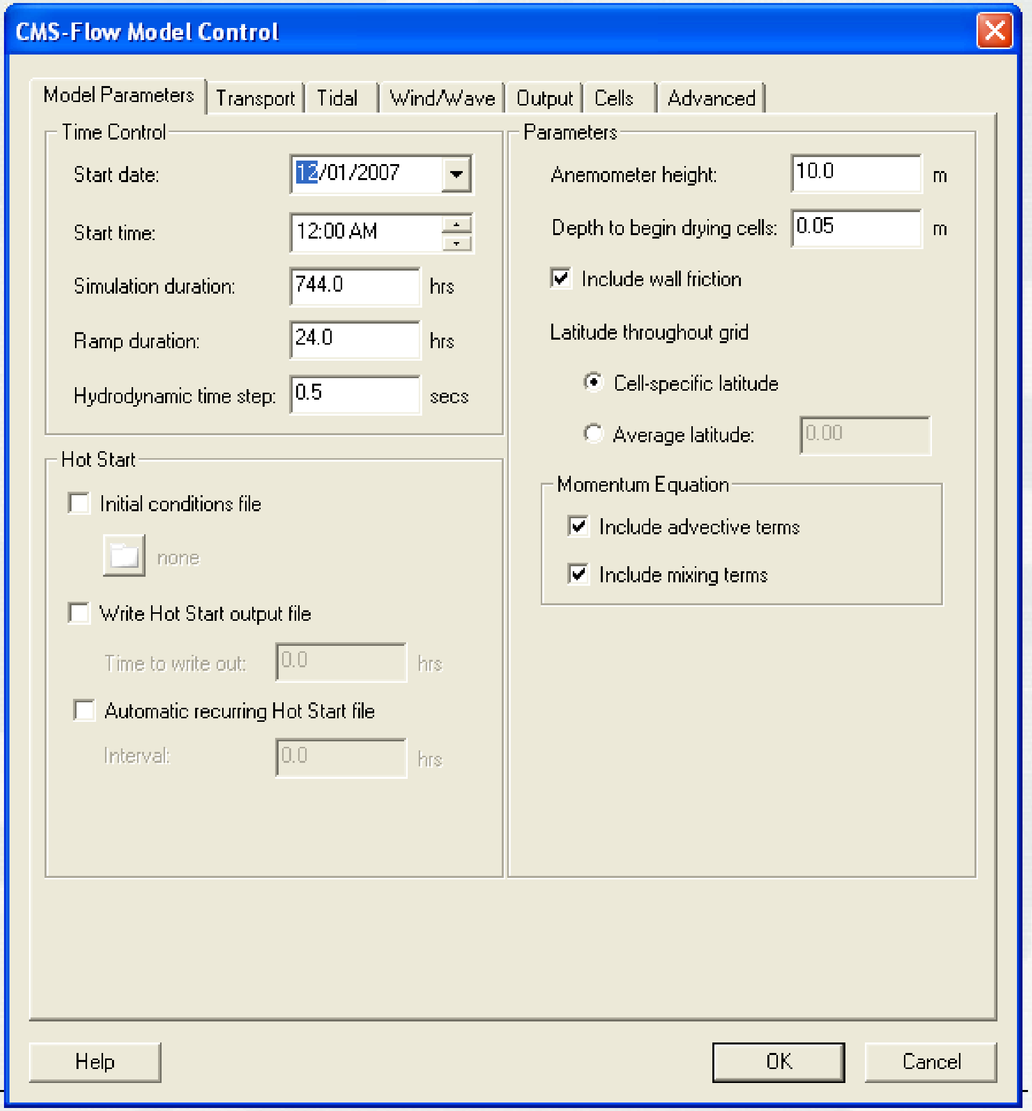
The Cellstring menu contains operations for boundary condition forcing strings.

The CMS-Flow menu contains commands to operate the model.

- Assign BC – Assigns boundary condition forcing information to cellstrings
- Delete BC – Delete the forcing informaiton from a cellstring
- Model Control – Set up the parameters and running options for the CMS-Flow simulation
- Run CMS-Flow – Start CMS-Flow based on Model Control options.

CMS-Flow Model Control
Parameter Specification and File I/O

- Time Control
- Auxiliary Files
- Parameters
  - Wet/Dry depth
  - Flags
- Calculations to Include
  - Sediment Transport
  - Wind
  - Waves
  - Salinity


CMS-Flow Model Control
Model Parameters
Transport
Tidal
Wind/Wave
Output
Cells
Advanced
Help
OK
Cancel

Time Control

Start date: 12/01/2007

Start time: 12:00 AM

Simulation duration: 744.0 hrs

Ramp duration: 24.0 hrs

Hydrodynamic time step: 0.5 secs

Hot Start

☐ Initial conditions file

none

☐ Write Hot Start output file

Time to write out: 0.0 hrs

☐ Automatic recurring Hot Start file

Interval: 0.0 hrs

Parameters

Anemometer height: 10.0 m

Depth to begin drying cells: 0.05 m

☑ Include wall friction

Latitude throughout grid

● Cell-specific latitude

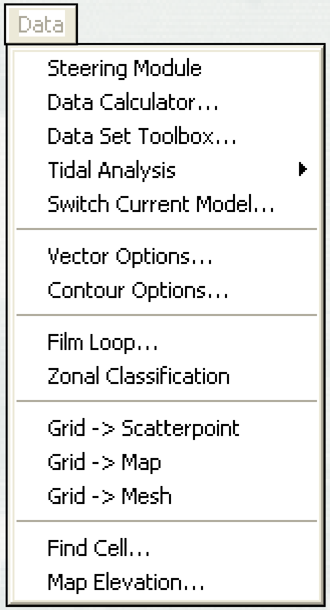
○ Average latitude: 0.00

Momentum Equation

☑ Include advective terms

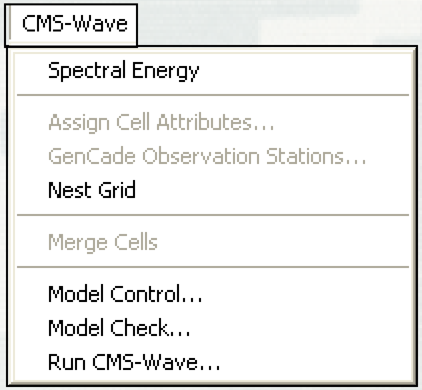
☑ Include mixing terms

CMS-Wave Interface: Pull-down Menus


Data
Steering Module
Data Calculator...
Data Set Toolbox...
Tidal Analysis
Switch Current Model...
Vector Options...
Contour Options...
Film Loop...
Zonal Classification
Grid -> Scatterpoint
Grid -> Map
Grid -> Mesh
Find Cell...
Map Elevation...

The Data are the same for both CMS-Flow and CMS-Wave.

- Steering Module – Starts/controls interaction between Flow and Wave
- Data Calculator – Dataset-based functions
- Dataset Toolbox – Dataset-based operations (includes Calculator)
- Vector/Contour Options – Change appearance of data in Graphics Window
- Film Loop – Generate animations based on loaded data/solutions
- Grid -> Scatterpoint – Convert CMS-Flow grid to Scatterpoint dataset (TIN)

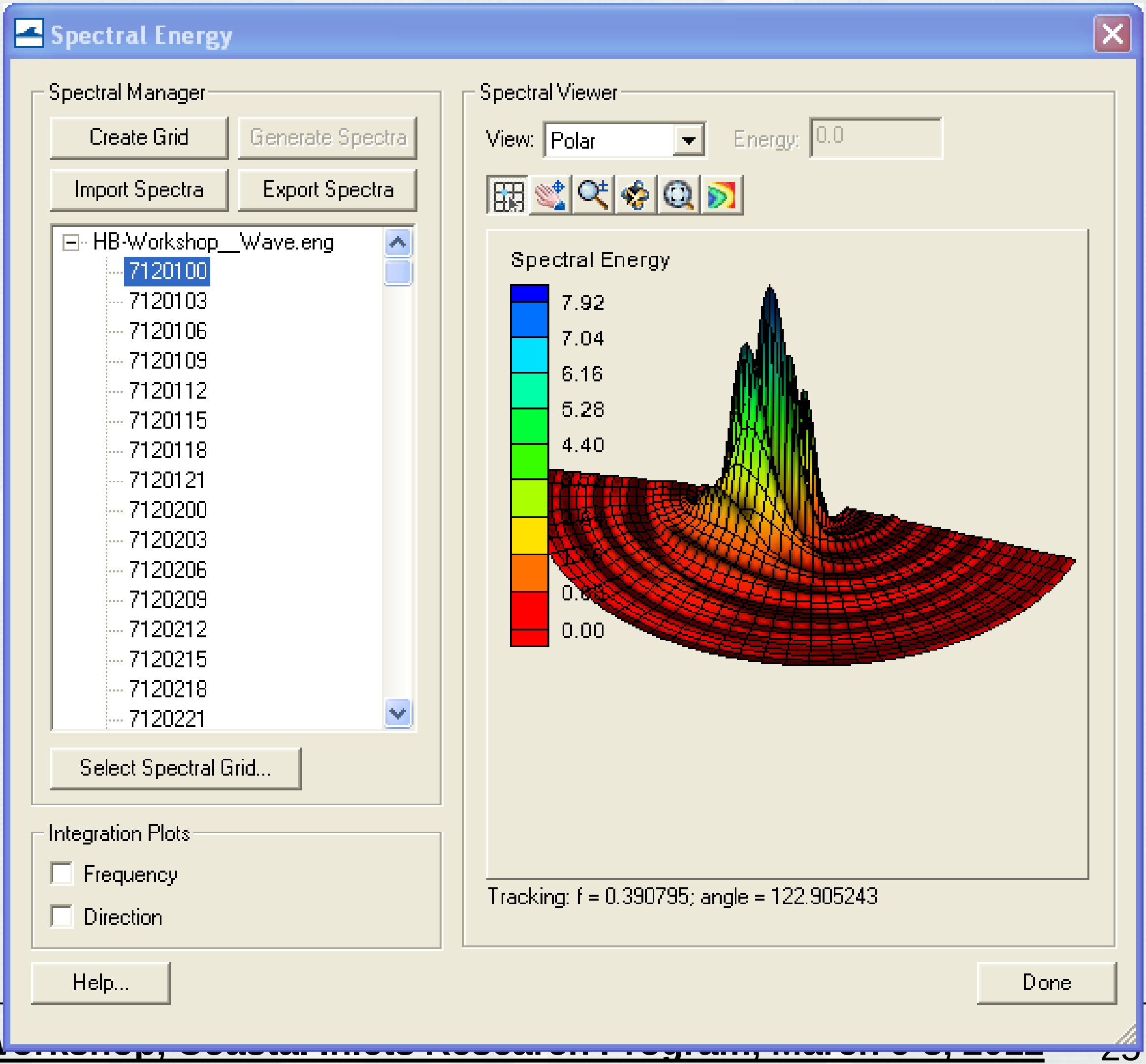

CMS-Wave
Spectral Energy
Assign Cell Attributes...
GenCade Observation Stations...
Nest Grid
Merge Cells
Model Control...
Model Check...
Run CMS-Wave...

The CMS-Wave menu contains commands to operate the model.

- Spectral Energy – Allows user to Create Spectral Energy forcing from wave characteristics or Import existing data from a wave gauge
- Nest Grid – Allows use of a nested (child) wave grid for better resolution in some areas
- Model Control – Set up the parameters and running options for a CMS-Wave simulation
- Model Check – Analyze present wave grid and modeling parameters for errors before run commences.
- Run CMS-Wave – Start CMS-Wave based on Model Control options.

Spectral Energy menu

Example of Imported Spectra from Wave Gauge



Spectral Energy

Spectral Manager

Create Grid
Generate Spectra
Import Spectra
Export Spectra

HB-Workshop__Wave.eng
- 7120100
- 7120103
- 7120106
- 7120109
- 7120112
- 7120115
- 7120118
- 7120121
- 7120200
- 7120203
- 7120206
- 7120209
- 7120212
- 7120215
- 7120218
- 7120221

Select Spectral Grid...

Integration Plots

☐ Frequency

☐ Direction

Spectral Viewer

View: Polar

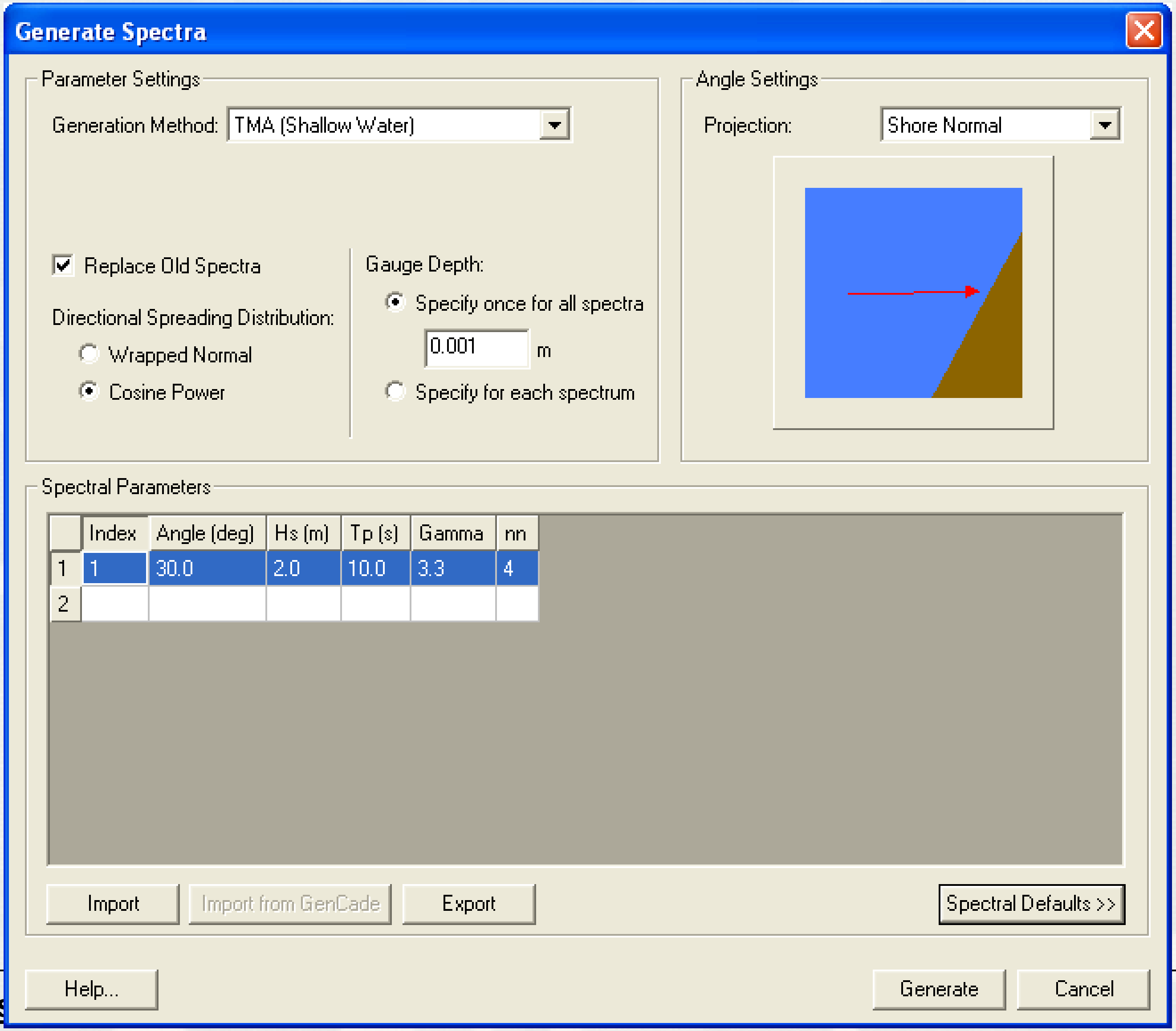
Energy: 0.0

Spectral Energy
7.92
7.04
6.16
5.28
4.40
0.00

Tracking: f = 0.390795; angle = 122.905243

Help...
Done

Generate Spectra from Bulk Criteria



Generate Spectra

Parameter Settings

Generation Method: TMA (Shallow Water)

☑ Replace Old Spectra

Directional Spreading Distribution:

○ Wrapped Normal

● Cosine Power

Gauge Depth:

● Specify once for all spectra

0.001 m

○ Specify for each spectrum

Angle Settings

Projection: Shore Normal

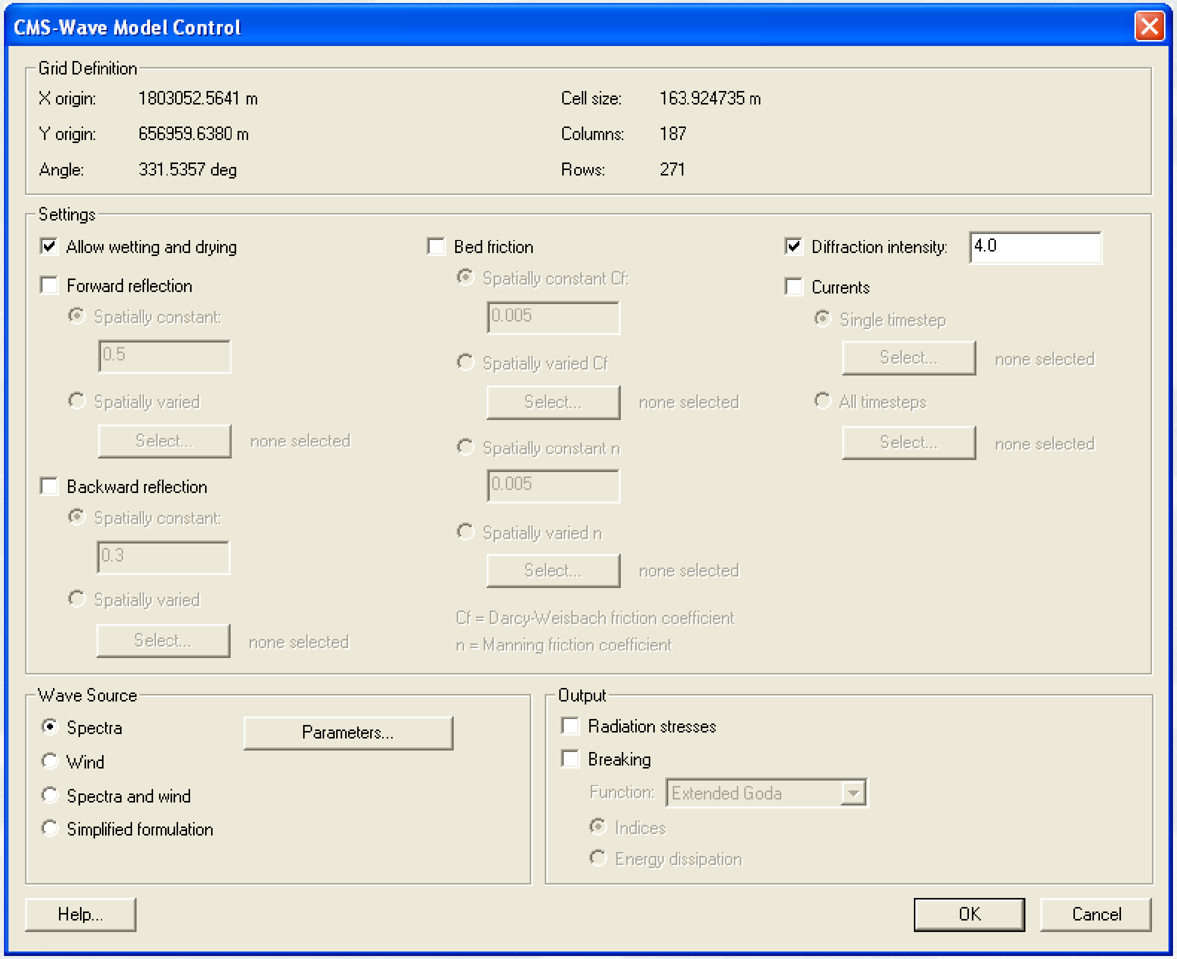
Spectral Parameters

	Index	Angle (deg)	Hs (m)	Tp (s)	Gamma	nn
1	1	30.0	2.0	10.0	3.3	4
2						

Import
Import from GenCade
Export
Spectral Defaults >>
Help...
Generate
Cancel

Model Control

- Turn on Wetting & Drying of Cells
- Turn on Reflection (FWD, BWD)
- Choose Bed Friction type
- Set parameters
- Choose Output Datasets
- Choose Wave Source



CMS-Wave Model Control

Grid Definition

X origin:	1803052.5641 m	Cell size:	163.924735 m
Y origin:	656959.6380 m	Columns:	187
Angle:	331.5357 deg	Rows:	271

Settings

☑ Allow wetting and drying

☐ Forward reflection
- ● Spatially constant: 0.5
- ○ Spatially varied — none selected

☐ Backward reflection
- ● Spatially constant: 0.3
- ○ Spatially varied — none selected

☐ Bed friction
- ● Spatially constant Cf: 0.005
- ○ Spatially varied Cf — none selected
- ○ Spatially constant n: 0.005
- ○ Spatially varied n — none selected

Cf = Darcy-Weisbach friction coefficient
n = Manning friction coefficient

☑ Diffraction intensity: 4.0

☐ Currents
- ● Single timestep — none selected
- ○ All timesteps — none selected

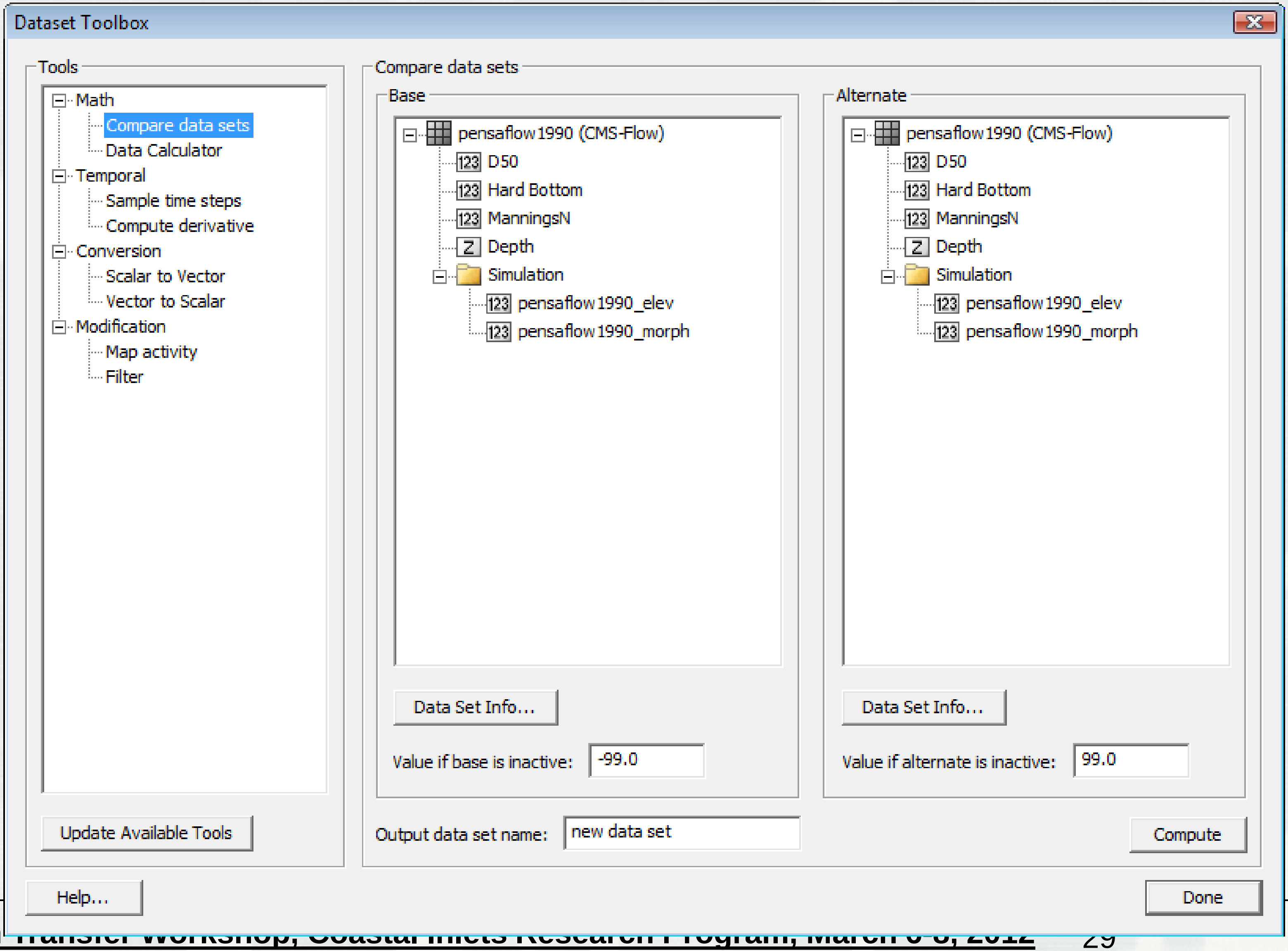
Wave Source
- ● Spectra
- ○ Wind
- ○ Spectra and wind
- ○ Simplified formulation

Output
- ☐ Radiation stresses
- ☐ Breaking
  - Function: Extended Goda
  - ● Indices
  - ○ Energy dissipation

Recent additions to the SMS

- Dataset Toolbox
- Grid duplication/rotation tools
- Web Menu
- Spatial Data Coverages
  - Data types
  - Plot types
  - Compass plots
- Coordinate Projections
  - More projections
  - Automatic re-projection of data with projection file

Dataset Toolbox


Dataset Toolbox
Tools
Math
Compare data sets
Data Calculator
Temporal
Sample time steps
Compute derivative
Conversion
Scalar to Vector
Vector to Scalar
Modification
Map activity
Filter
Update Available Tools
Compare data sets
Base
pensaflow1990 (CMS-Flow)
D50
Hard Bottom
ManningsN
Depth
Simulation
pensaflow1990_elev
pensaflow1990_morph
Data Set Info...
Alternate
pensaflow1990 (CMS-Flow)
D50
Hard Bottom
ManningsN
Depth
Simulation
pensaflow1990_elev
pensaflow1990_morph
Data Set Info...
Compute
Help...
Done

Value if base is inactive: -99.0

Value if alternate is inactive: 99.0

Output data set name: new data set

Dataset Toolbox

- Temporal Operations
  - Sample times
  - Temporal derivatives
- Mathematical Operations
  - Comparisons
  - Data Calculator
- Spatial Operations
  - Spacing
  - Gradients/Derivatives
  - Smoothing

- Conversions
  - ▸ Vector <-> Scalars
- Coastal Functions
  - ▸ Wavelength/Celerity
  - ▸ Courant number
- Activity Mapping
  - ▸ Map activity
  - ▸ Value filtering

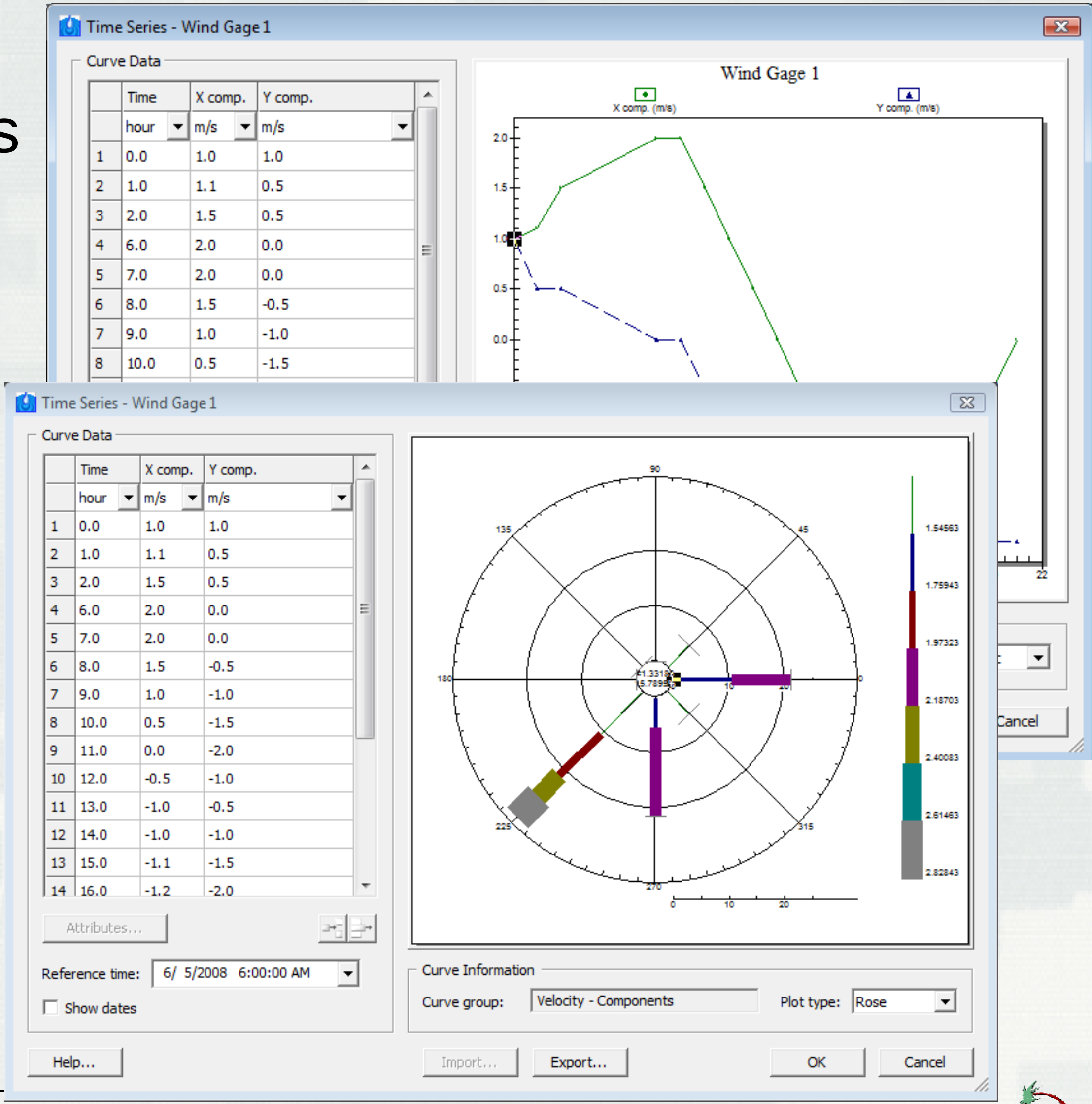
Web Menu

- **Import data from web …**
  - Virtual Earth
  - Image data
  - Elevation data
- **Find Data**
  - Links to useful web sites
- **Tidal Data**
  - Links to coastal filtering tools

bing™
20 miles
© 2009 Microsoft Corporation
© Harris Corp, Earthstar Geographics LLC

Spatial Data Coverages

- Create nodes at locations of interest (gauges)
- Associate temporal data with location
    - Scalar data
    - X/Y vector data
    - Mag/dir vector data
- Plot types
    - Scientific
    - Multi-axis
    - Rose plots



Time Series - Wind Gage 1

Curve Data

	Time	X comp.	Y comp.
	hour	m/s	m/s
1	0.0	1.0	1.0
2	1.0	1.1	0.5
3	2.0	1.5	0.5
4	6.0	2.0	0.0
5	7.0	2.0	0.0
6	8.0	1.5	-0.5
7	9.0	1.0	-1.0
8	10.0	0.5	-1.5

Wind Gage 1
X comp. (m/s)
Y comp. (m/s)
2.0
1.5
1.0
0.5
0.0
22
Cancel

Time Series - Wind Gage 1

Curve Data

	Time	X comp.	Y comp.
	hour	m/s	m/s
1	0.0	1.0	1.0
2	1.0	1.1	0.5
3	2.0	1.5	0.5
4	6.0	2.0	0.0
5	7.0	2.0	0.0
6	8.0	1.5	-0.5
7	9.0	1.0	-1.0
8	10.0	0.5	-1.5
9	11.0	0.0	-2.0
10	12.0	-0.5	-1.0
11	13.0	-1.0	-0.5
12	14.0	-1.0	-1.0
13	15.0	-1.1	-1.5
14	16.0	-1.2	-2.0

Reference time: 6/ 5/2008 6:00:00 AM

☐ Show dates

Curve Information

Curve group: Velocity - Components

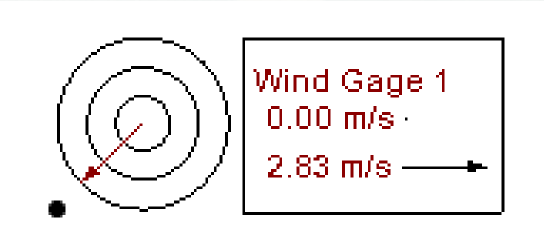
Plot type: Rose

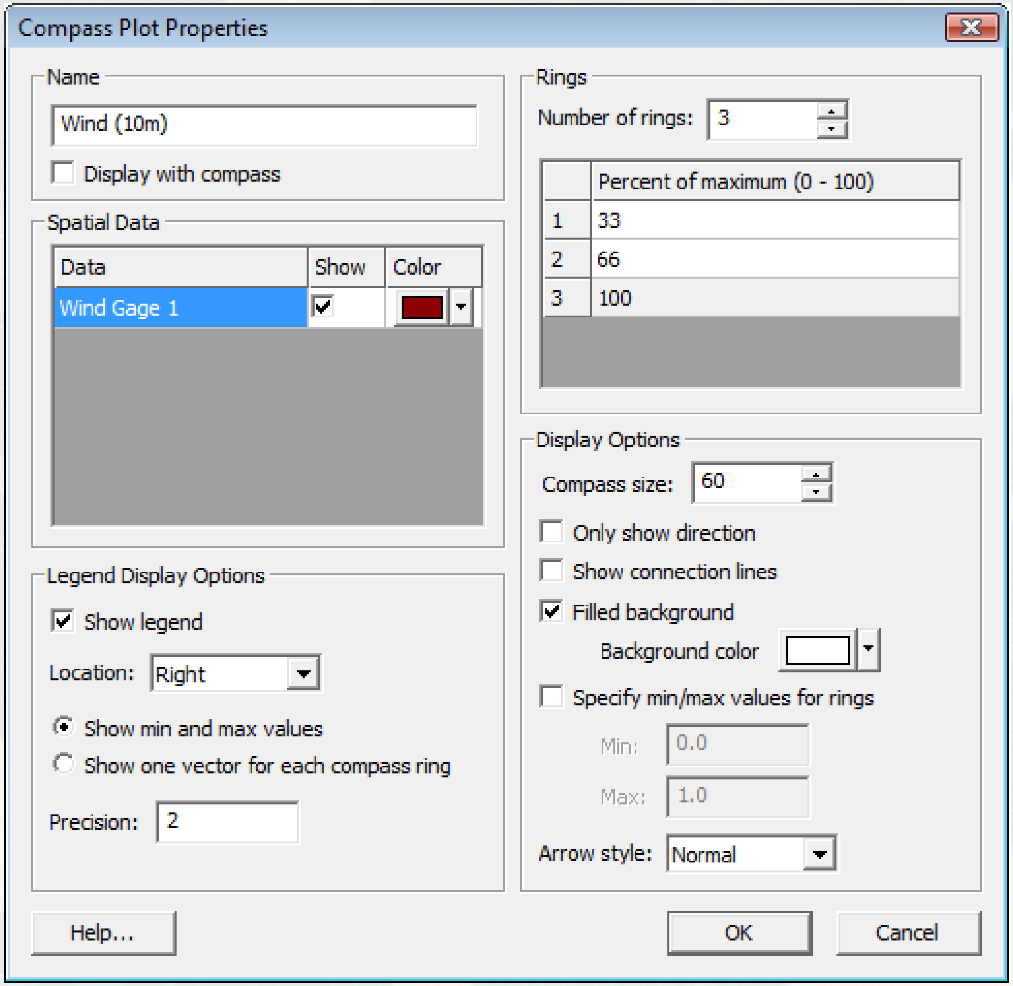
Attributes...
90
45
135
180
0
225
270
315
10
20
1.33182
5.78995
1.54563
1.75943
1.97323
2.18703
2.40083
2.61463
2.82843
Help...
Import...
Export...
OK
Cancel

Spatial Data Coverages

Compass plot

- Displayed on graphics window
- Updates with dates
- User managed




Compass Plot Properties

Name: Wind (10m)
☐ Display with compass

Spatial Data

Data	Show	Color
Wind Gage 1	☑	🟥

Legend Display Options
☑ Show legend
Location: Right
● Show min and max values
○ Show one vector for each compass ring
Precision: 2

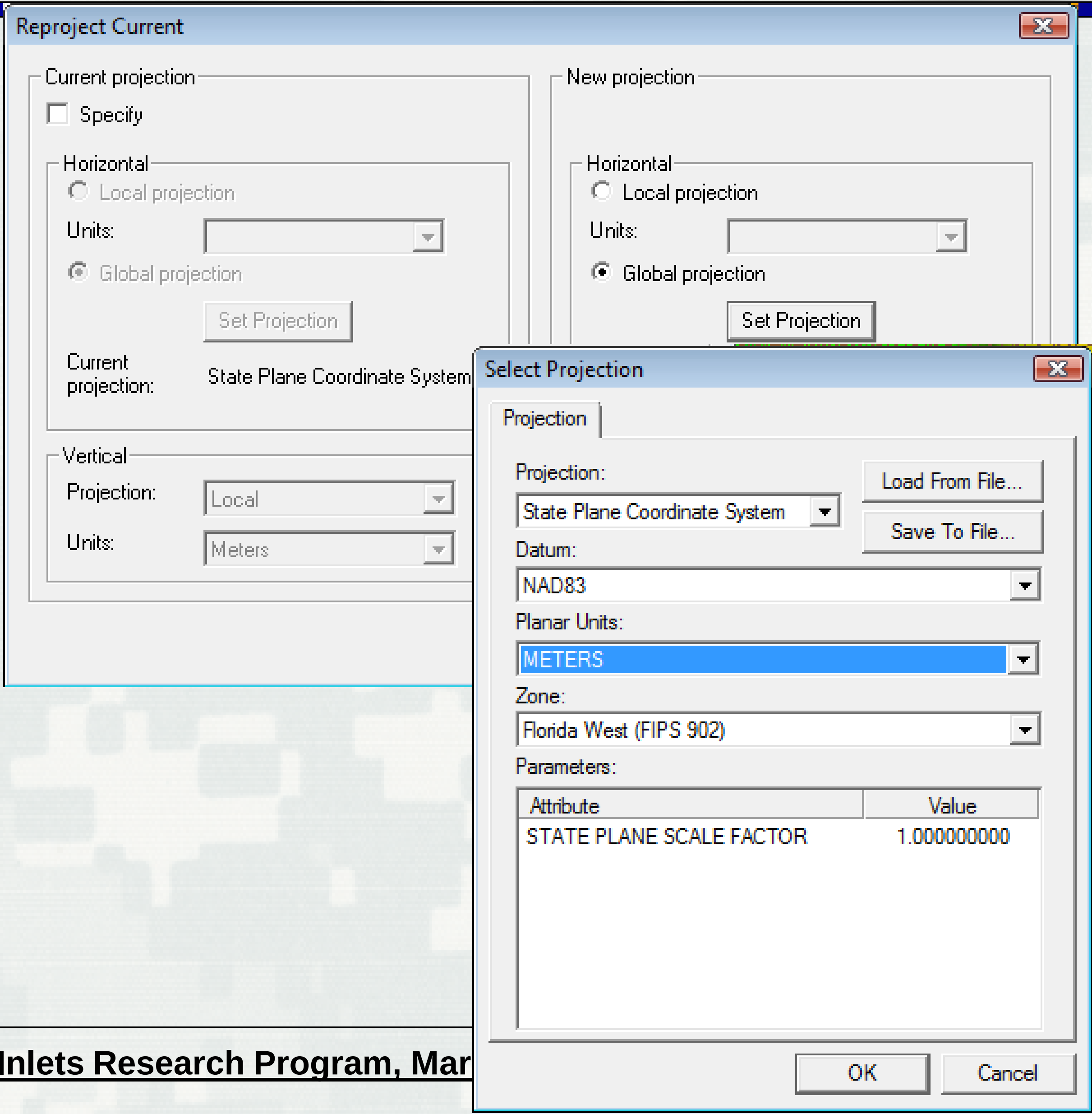
Rings
Number of rings: 3

	Percent of maximum (0 - 100)
1	33
2	66
3	100

Display Options
Compass size: 60
☐ Only show direction
☐ Show connection lines
☑ Filled background
Background color
☐ Specify min/max values for rings
Min: 0.0
Max: 1.0
Arrow style: Normal

Coordinate Projections

- All major datums
- Project
  - Point
  - Object
  - Entire project
- Support for projection files
- Automatic detection of projections
  - Images
  - CAD
  - GIS



Reproject Current

Current projection

☐ Specify

Horizontal

○ Local projection

Units:

● Global projection

Current projection: State Plane Coordinate System

Vertical

Projection: Local

Units: Meters

New projection

Horizontal

○ Local projection

Units:

● Global projection

Select Projection

Projection: State Plane Coordinate System

Datum: NAD83

Planar Units: METERS

Zone: Florida West (FIPS 902)

Parameters:

Attribute	Value
STATE PLANE SCALE FACTOR	1.000000000

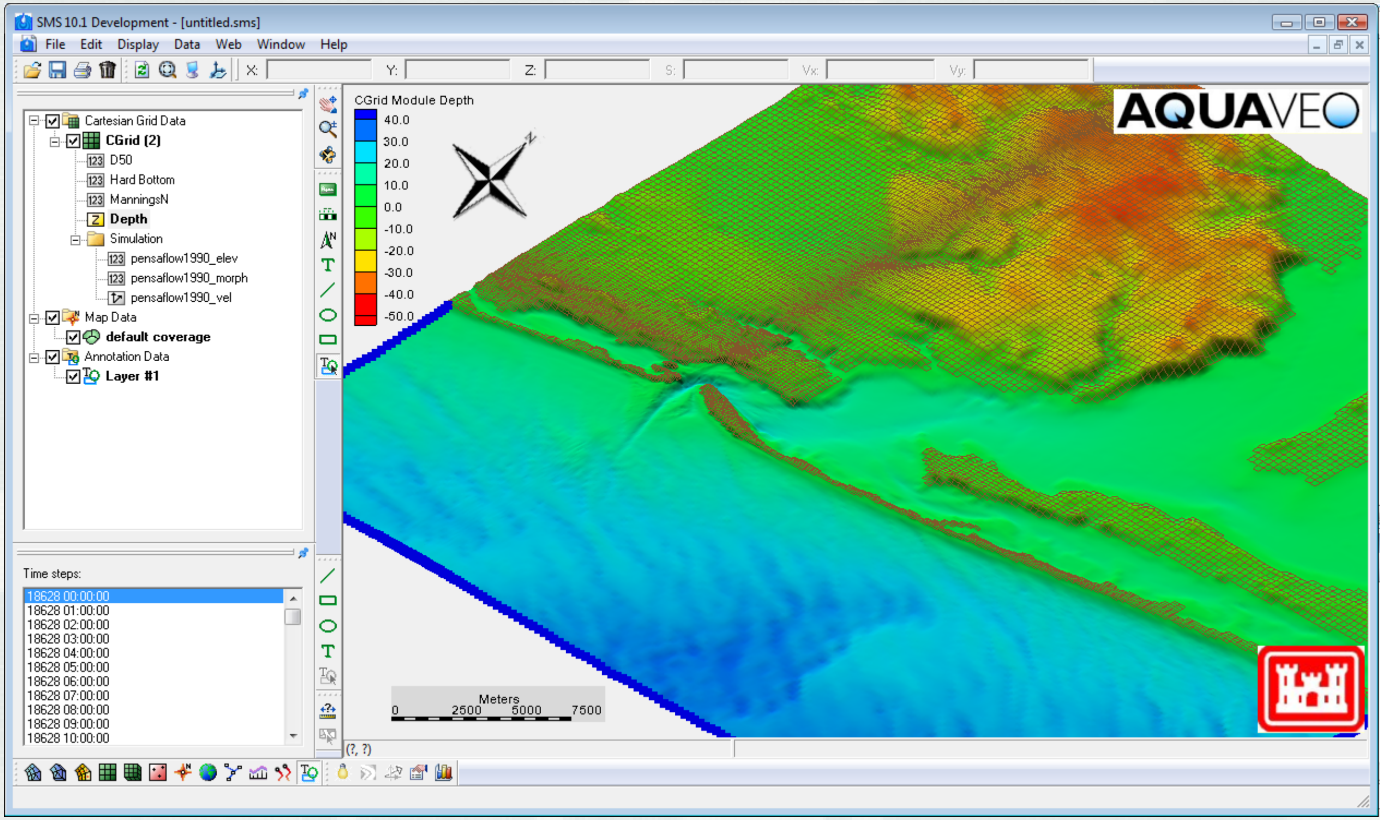
Set Projection
Set Projection
Projection
Load From File...
Save To File...
OK
Cancel

SMS – Post Processing

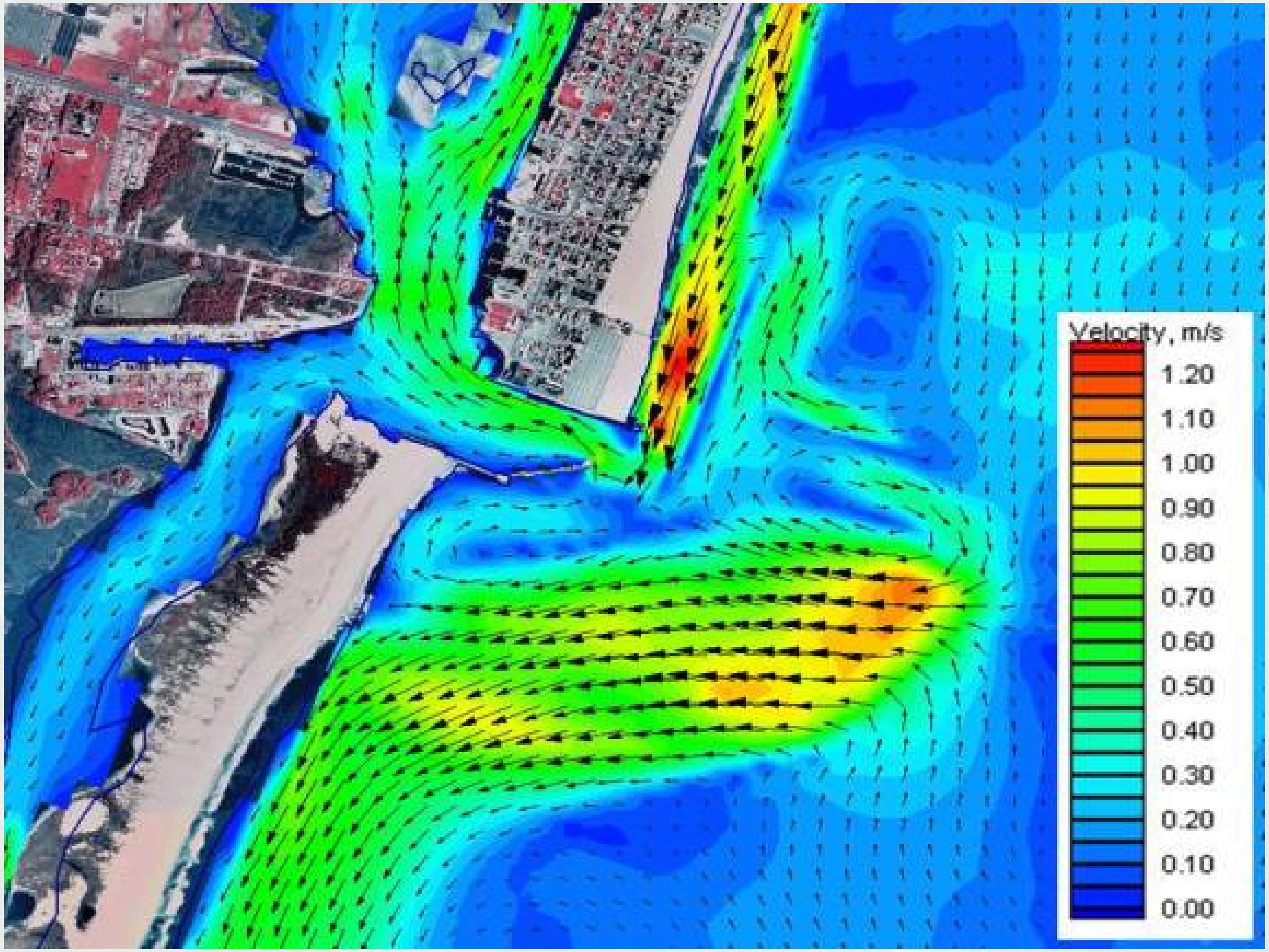
- Annotations
- Graphic images
- Animations
  - AVI filmloops
  - kmz – Google Earth Exports
- 2D Plots
  - Time series
  - Profiles and Cross sections – both steady state and transient

Annotation Layers

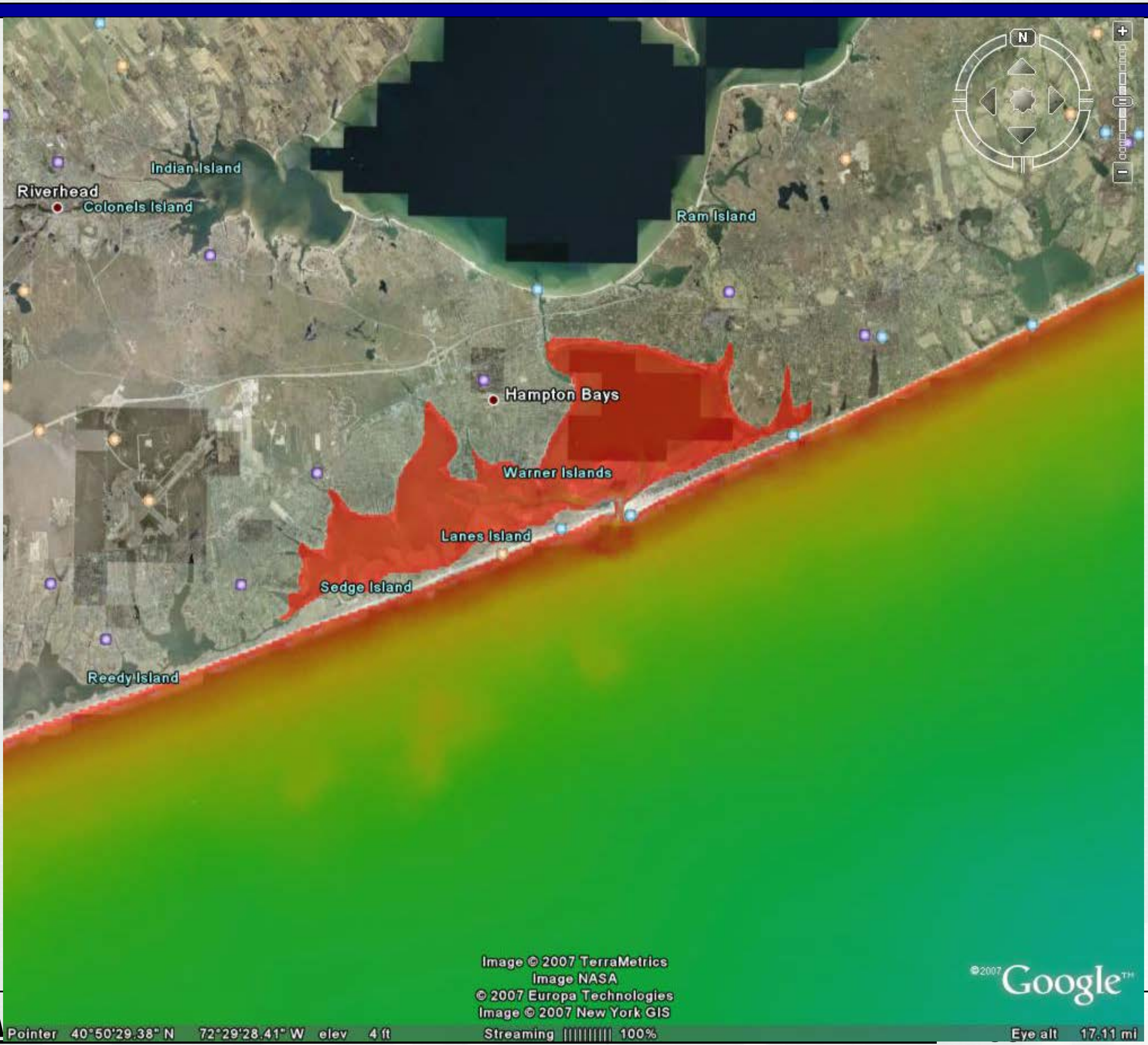
- Replaces Drawing Objects
- New Objects
    - Screen space images (logos)
    - Scale bars
    - North Arrows
- Organizes entities into layers
- Anchored in either world or screen


SMS 10.1 Development - [untitled.sms]
File Edit Display Data Web Window Help
X: Y: Z: S: Vx: Vy:
Cartesian Grid Data
CGrid (2)
D50
Hard Bottom
ManningsN
Depth
Simulation
pensaflow1990_elev
pensaflow1990_morph
pensaflow1990_vel
Map Data
default coverage
Annotation Data
Layer #1
Time steps:
18628 00:00:00
18628 01:00:00
18628 02:00:00
18628 03:00:00
18628 04:00:00
18628 05:00:00
18628 06:00:00
18628 07:00:00
18628 08:00:00
18628 09:00:00
18628 10:00:00
CGrid Module Depth
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
N
AQUAVEO
Meters
0
2500
5000
7500
(?, ?)

Contour/Vector Plots


Velocity, m/s
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00

Google Overlay (zoom)


Indian Island
Riverhead
Colonels Island
Ram Island
Hampton Bays
Warner Islands
Lanes Island
Sedge Island
Reedy Island
N
Image © 2007 TerraMetrics
Image NASA
© 2007 Europa Technologies
Image © 2007 New York GIS
©2007 Google™
Pointer 40°50'29.38" N 72°29'28.41" W elev 4 ft
Streaming ||||||||| 100%
Eye alt 17.11 mi

Obtaining and Activating SMS

http://cirp.usace.army.mil/products/SMS.html

USACE –

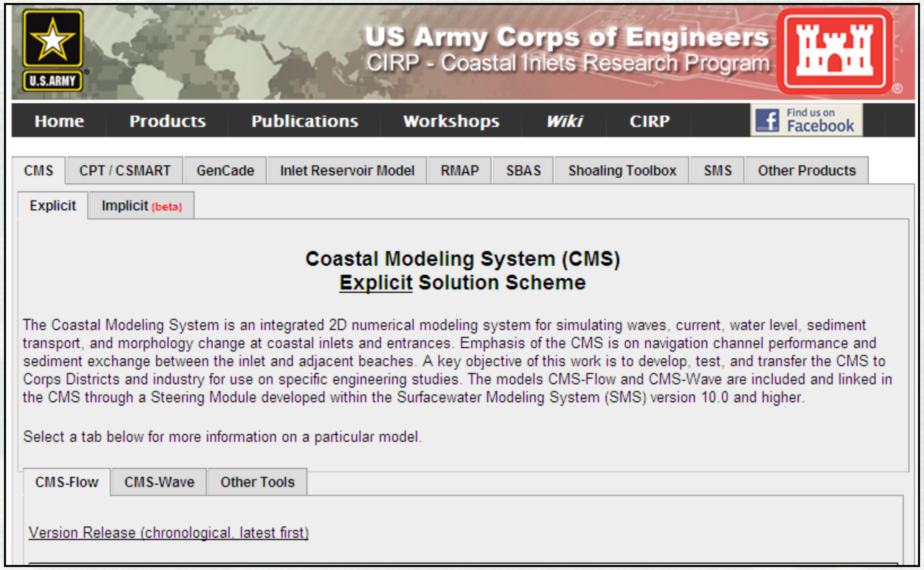
Contact sms@erdc.usace.army.mil and request a password for SMS 11.0.

Others –

- Visit http://www.aquaveo.com/password_request for a temporary password.
- Contact Aquaveo sales at sales@aquaveo.com or call (801) 302-1400.
- Request evaluation version from within the SMS registration form.

Documentation

- CIRP website


US Army Corps of Engineers
CIRP - Coastal Inlets Research Program
U.S. ARMY
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Publications
Workshops
Wiki
CIRP
Find us on Facebook
CMS
CPT / CSMART
GenCade
Inlet Reservoir Model
RMAP
SBAS
Shoaling Toolbox
SMS
Other Products
Explicit
Implicit (beta)
CMS-Flow
CMS-Wave
Other Tools

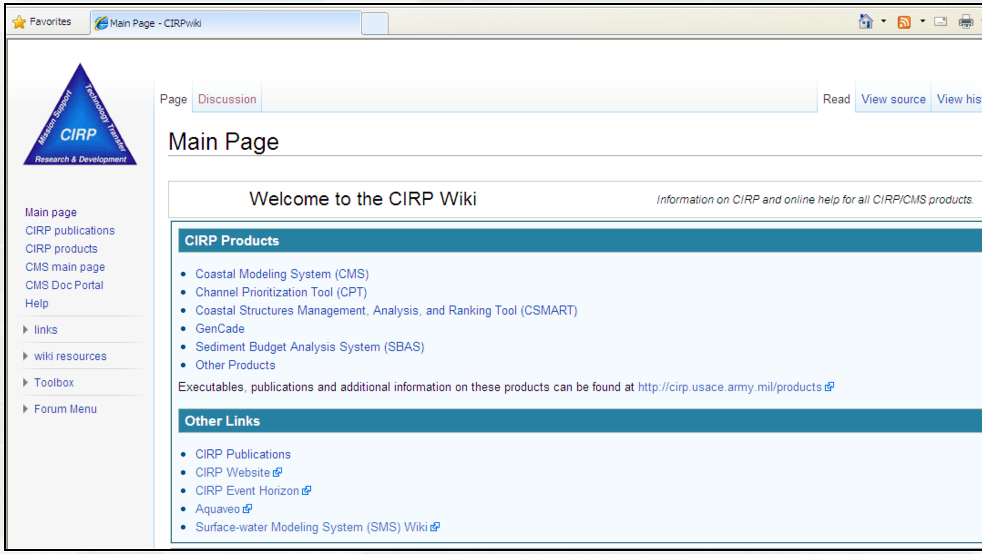
Coastal Modeling System (CMS)
Explicit Solution Scheme

The Coastal Modeling System is an integrated 2D numerical modeling system for simulating waves, current, water level, sediment transport, and morphology change at coastal inlets and entrances. Emphasis of the CMS is on navigation channel performance and sediment exchange between the inlet and adjacent beaches. A key objective of this work is to develop, test, and transfer the CMS to Corps Districts and industry for use on specific engineering studies. The models CMS-Flow and CMS-Wave are included and linked in the CMS through a Steering Module developed within the Surfacewater Modeling System (SMS) version 10.0 and higher.

Select a tab below for more information on a particular model.

Version Release (chronological, latest first)

- Wiki Website


Favorites
Main Page - CIRPwiki
CIRP
Mission Support
Technology Transfer
Research & Development
Page
Discussion
Read
View source
View his
Main page
CIRP publications
CIRP products
CMS main page
CMS Doc Portal
Help
links
wiki resources
Toolbox
Forum Menu

Main Page

Welcome to the CIRP Wiki

Information on CIRP and online help for all CIRP/CMS products.

CIRP Products

- Coastal Modeling System (CMS)
- Channel Prioritization Tool (CPT)
- Coastal Structures Management, Analysis, and Ranking Tool (CSMART)
- GenCade
- Sediment Budget Analysis System (SBAS)
- Other Products

Executables, publications and additional information on these products can be found at http://cirp.usace.army.mil/products

Other Links

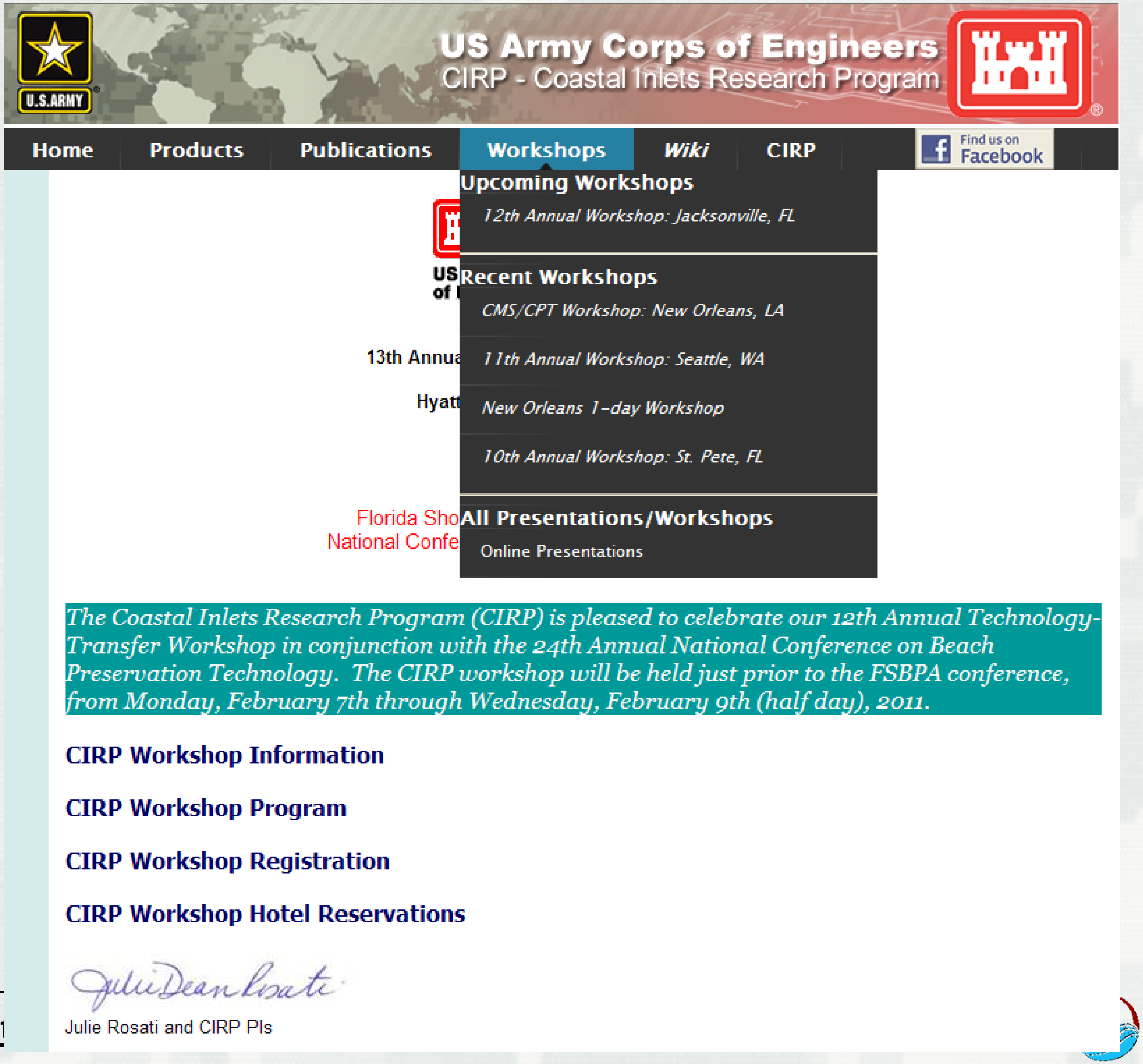
- CIRP Publications
- CIRP Website
- CIRP Event Horizon
- Aquaveo
- Surface-water Modeling System (SMS) Wiki

http://cirp.usace.army.mil/

http://cirp.usace.army.mil/wiki/

Documentation
Website

- Products
  - CMS
  - GenCade
  - Others
- Publications
  - Technical Reports
  - CHETNS
  - Journal Articles
  - Others
- Workshops
  - Upcoming
  - Recent


US Army Corps of Engineers
CIRP - Coastal Inlets Research Program
U.S. ARMY
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12th Annual Workshop: Jacksonville, FL
Recent Workshops
CMS/CPT Workshop: New Orleans, LA
11th Annual Workshop: Seattle, WA
New Orleans 1-day Workshop
10th Annual Workshop: St. Pete, FL
All Presentations/Workshops
Online Presentations
US
of
13th Annua
Hyatt
Florida Sho
National Confe

The Coastal Inlets Research Program (CIRP) is pleased to celebrate our 12th Annual Technology-Transfer Workshop in conjunction with the 24th Annual National Conference on Beach Preservation Technology. The CIRP workshop will be held just prior to the FSBPA conference, from Monday, February 7th through Wednesday, February 9th (half day), 2011.

CIRP Workshop Information

CIRP Workshop Program

CIRP Workshop Registration

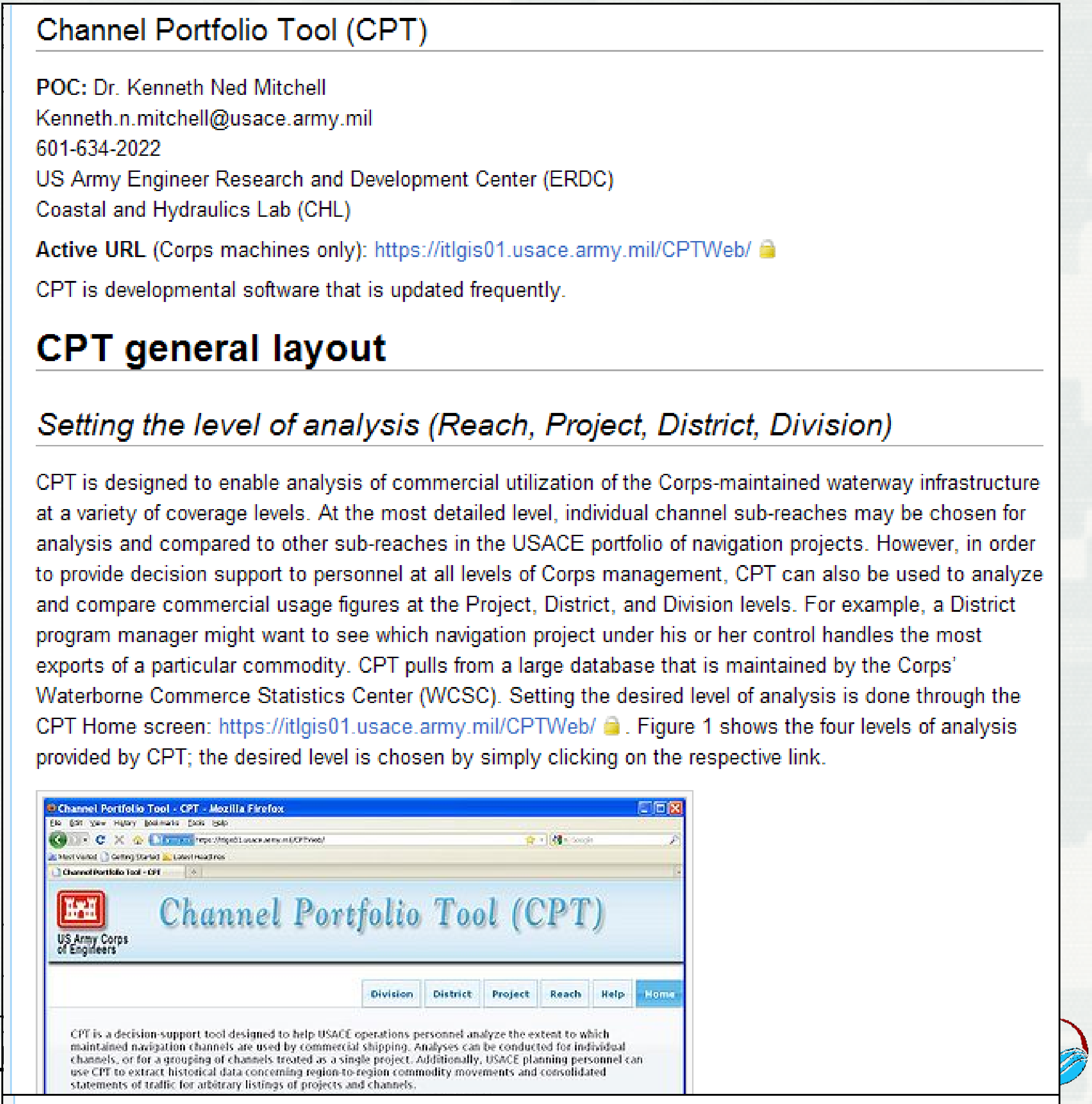
CIRP Workshop Hotel Reservations

Julie Dean Rosati

Julie Rosati and CIRP PIs

Documentation
Wiki

- CMS
  - Documentation Portal
  - Tutorials
  - Technical Info (Equations)
  - Validation Cases
- Gencade
  - Information
  - User Guide
- CPT/CSMART
  - Information and Guidance



Channel Portfolio Tool (CPT)

POC: Dr. Kenneth Ned Mitchell
Kenneth.n.mitchell@usace.army.mil
601-634-2022
US Army Engineer Research and Development Center (ERDC)
Coastal and Hydraulics Lab (CHL)

Active URL (Corps machines only): https://itlgis01.usace.army.mil/CPTWeb/

CPT is developmental software that is updated frequently.

CPT general layout

Setting the level of analysis (Reach, Project, District, Division)

CPT is designed to enable analysis of commercial utilization of the Corps-maintained waterway infrastructure at a variety of coverage levels. At the most detailed level, individual channel sub-reaches may be chosen for analysis and compared to other sub-reaches in the USACE portfolio of navigation projects. However, in order to provide decision support to personnel at all levels of Corps management, CPT can also be used to analyze and compare commercial usage figures at the Project, District, and Division levels. For example, a District program manager might want to see which navigation project under his or her control handles the most exports of a particular commodity. CPT pulls from a large database that is maintained by the Corps' Waterborne Commerce Statistics Center (WCSC). Setting the desired level of analysis is done through the CPT Home screen: https://itlgis01.usace.army.mil/CPTWeb/ . Figure 1 shows the four levels of analysis provided by CPT; the desired level is chosen by simply clicking on the respective link.

Channel Portfolio Tool - CPT - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Most Visited Getting Started Latest Headlines
Channel Portfolio Tool - CPT
Channel Portfolio Tool (CPT)
US Army Corps of Engineers
Division
District
Project
Reach
Help
Home

CPT is a decision-support tool designed to help USACE operations personnel analyze the extent to which maintained navigation channels are used by commercial shipping. Analyses can be conducted for individual channels, or for a grouping of channels treated as a single project. Additionally, USACE planning personnel can use CPT to extract historical data concerning region-to-region commodity movements and consolidated statements of traffic for arbitrary listings of projects and channels.

Questions?

Mitch Brown
Mitchell.E.Brown@usace.army.mil
601-634-4036